

SAE *Journal*

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Opening a New Front AGAINST WEAR AND WASTE!

WHEN UNCLE SAM sent out a call to muster the Truckmen and Servicemen of America into the U. S. Truck Conservation Corps, he found his nephews of the Highway and of the Work Bench ready and eager to do their part. Men of the trucking and service industries proved long since that loyal American hearts are worn underneath jumpers as well as shining uniforms.

On the Bendix sector of this new war front—specifically on brakes, carburetors and vacuum power brakes—Bendix service stations everywhere are on the alert. Under the banner of the U. S. Truck Conservation

Corps, they are helping make America's transport vehicles outlast the Axis.

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New Army Transport Corps To Speed Traffic Flow

THE Motor Transport Division of the Quartermaster Corps no longer exists.

Its functions in procurement, engineering, and maintenance of motor vehicles have been transferred to the Ordnance Department, while a newly established Army Transportation Corps—reporting directly to the Services of Supply as do the Ordnance Department, the Quartermaster Corps, the Corps of Engineers, the Signal Corps and other service branches of the Army—will coordinate, direct, and speed the flow of:

- Troops
- War workers in munitions plants
- Military equipment and supplies, and
- Raw materials and supplies and parts to and from munitions factories to explosives plants.

Performing this broad function, the new Army Transportation Corps will encompass many motor-vehicle operating problems which once were the function of the QMC Motor Transport Corps.

Welding of the motor-vehicle procurement, engineering, and maintenance functions of the former QMC-MTC into the existing Ordnance organization is proceeding apace as this issue of the SAE Journal goes to press and full details are promised for the October issue.

The new Army Transportation Corps organization generally parallels the status of the Ordnance Department, the Corps of Engineers, the Quartermaster Corps, etc. Its

Heads New Army Transportation Corps



Major-Gen. Charles P. Gross, who saw service in France soon after his graduation from West Point. A Corps of Engineers officer, he has served in Nicaragua twice. He is, in effect, traffic manager for the War Department for highway, rail, and water shipments of all kinds, and is in charge of all transportation units formerly under the jurisdiction of the Chief of the Quartermaster Corps. He was assigned to Russia in 1941 on the Special Supply Mission, and was advanced to brigadier general last March.



nucleus is the combined function and part of the personnel of the Supply Division, General Staff (G-4), the Transportation Division, Office of the Quartermaster General, and such Army establishments as Ports of Embarkation, Staging Areas, and Reconsignment Stations for overseas shipments.

Five operating divisions have been established. With their chiefs they are:

- **Highway**, Frederick C. Horner, an SAE member and formerly assistant to the chairman, General Motors Corp., and for more than two years a highway transportation consultant to the national defense effort;
- **Water**, Col. J. M. Franklin, formerly

head of the U. S. Steamship Lines;

- **Rail**, J. Appleton, an executive of the Pennsylvania Railroad Co.;

- **Transit & Storage**, Col. L. J. Coughlin, executive of the Tide Water Terminals Chain & Warehouses, Inc.; and

- **Traffic Control**, Col. W. J. Williamson, until recently traffic manager of Sears, Roebuck & Co.

The last named division has been called

(Continued on page 25)

New Deputy Chief Of Army Transportation



Brig.-Gen. Theodore H. Dillon served in the Army Corps of Engineers for fifteen years following his graduation from West Point. Winner of the Distinguished Service Medal for his work as commander of the 37th Engineers during the St. Mihiel and Meuse-Argonne offensives, he was an official of the American Peace Commission. He resigned from the Army in 1919 to become professor of electrical engineering at MIT, taught two years at Harvard, and then became assistant to the president, United Fruit Co. On March 25, 1941, was appointed chief of the Transportation Division, Office of the Quartermaster General.

Ordnance Department—now encompassing ALL types of automotive equipment—is set to push preventive maintenance vigorously.

Education and supervision of manpower using the equipment will get impressive emphasis.

Ideas or actions from equipment manufacturers pointing in this direction will be welcome.



U. S. Army photos

Emblem of the Army's newest service organization, the Army Transportation Corps of the Services of Supply:

Highway, represented by the Federal highway marker shield, Railroad, flanged wheel with wings, and Water, the eight-spoked steersman's wheel. To be worn by ATC officers and enlisted men.

War Contract Renegotiation Policy Is Realistic; Trick Theories Junked

CLEARCUT and concise, the policy of renegotiating government contracts by the Army, Navy and Maritime Commission demonstrates that some important men in government understand American business philosophy.

Automotive executives, who worked out the basic policy with government officials, were praised for their "excellent cooperation" in developing the details. Principles include:

- War contracts will be renegotiated by only one price adjustment unit. The Army, Navy, or Maritime Commission—depending upon which is taking the largest share of a company's output—will renegotiate in behalf of the other government agencies;

- Overall profit before taxes on war business will be the basis of renegotiation, rather than individual contracts;

- The right of industry to make a reasonable profit is recognized by the government as fundamental. Abnormal business risks will be a factor;

- Neither detailed audits nor complete scrutiny of contractors' books and records are contemplated. The program is undertaken in the spirit of complete cooperation;

Variable factors which will be considered, but which cannot be measured by any formula, include:

- Inventive contribution;
- Quality of production;
- Rate of production;
- Economy in the use of materials, and
- Efficiency in production.

Variable factors in profit and loss include:

- Increases in labor costs;
- Increases in materials costs;
- Inexperience with new arms products,

and

- Delays of getting materials.

Scores of complex plans with complicated formulae were tossed into the ash cans to the chagrin of economists attached to some of the newer war effort bureaus.

Because of its field organization, the Army will continue to renegotiate contracts in the field under this policy. The Navy and Maritime Commission renegotiations will be handled in Washington as in the past.

Thus, as far as the major war procurement agencies are concerned:

"Application of sound business principles to war production will be encouraged."



1000 Manufacturers Get \$3/4 Billion in Loans

Nearly 1000 loans, totaling almost \$3/4 billion, have been authorized through Federal Reserve Banks upon guarantees issued to manufacturers by the Army, Navy, and Maritime Commission.

Government contractors and their subcontractors apply to the procurement agency for loans. Such loans as are approved are certified by the military services to the Federal Reserve, and loans are authorized through commercial banks in an effort to speed war production.



The Army, Navy, and Maritime Commission say:

"The renegotiation program is really a tribute to the mass production proficiency and progressive technology of American industry.

"Numerous war contracts were rush-order jobs where there could be little foreknowledge of costs, but actual experience now supplies a realistic measure of these costs.

"Hence the renegotiation program is primarily in the nature of a re-appraisal of armament costs."

WPB's FUD Gets Results

FAR-REACHING in its implications, a basic WPB policy has made an about face, and what was the Contract Distribution effort is now the Facilities Utilization Division.

Instead of trying to find war contracts for small business threatened to go out of business because of curtailments, the job today is to find facilities for war manufacture.

How it works:

- The Army, Navy, or some other procurement agency has trouble in locating a plant adapted to make a certain armament product, part, or subassembly;

- The procurement agency describes its problem to the Facilities Utilization Division;

- W. B. Murphy, chief, gets his staff busy to locate such a plant;

- When located, FUD informs the procurement agency, gets the manufacturer and the procurement officer together.

A service organization to the military services, FUD believes in direct action, uses the telephone and airlines instead of mail, often shifts a contract from a successful manufacturer and convinces him he should take on a tougher job. The staff shuns voluminous statistics, depends upon the native horse sense of its hand-picked personnel of production engineers from more than a score of metal-working industries, and has obtained notable results—such as:

- Shifting the fine watch industry from fuses and caps to aircraft instruments during a week-end;

- Utilizing modern gray iron foundries, including several automotive plants, for magnesium castings. The savings, as compared to a proposed magnesium casting facilities program, ran into millions of dollars and many priceless months of time, and

- Numerous recommendations resulting in shifting machinery from one plant to another, sometimes across the country, to eliminate a bottleneck.

U. S. Seeks Foreign Information Sources

MEMBERS of the SAE who have special knowledge of foreign countries are requested by Wayne C. Taylor, Acting Secretary of Commerce, to notify him, requesting a form for submitting to the Department an outline of such knowledge about:

- Commodities used or produced abroad;
- Engineering practices;
- Economic conditions;
- Industries; and
- Social conditions.

"We would like to be able to call for this information as occasion warrants," Mr. Taylor said.

There are no positions open in connection with this inquiry, as this is not an offer for employment.



Kanzler is WPB's Chief Troubleshooter

Ernest Kanzler, erstwhile serving WPB both as chief of its Automotive Branch and as director of the Detroit District, has been appointed deputy chairman of WPB in charge of program progress. Thus, the former banker and automotive executive becomes WPB's No. 1 troubleshooter, charged with:

- Tracking down production delays, and
- Correcting them.

He will have at least three operating branches:

- Progress review, based on weekly reports of production on several hundred armament items;

- Reporting control which will consist of reporting these facts to other interested WPB executives, and

- Special inquiry into production lags and "imbalances" which today threaten the whole production effort.



Army Tells Itself To Save Materials

A second and more vigorous attack on the use of critical materials has been made by the Army for its \$7 1/2 billion construction program.

Restrictions have been tightened on copper, rubber, steel, zinc, lead, and aluminum.

Chromium, magnesium, and nickel are practically barred.

Prohibitions limit further use of drying oils for paints, lacquers, and other finishes, fuel oil, wool, mahogany, and aircraft grades of spruce lumber.

Results of the April 1 order and estimates on savings of the August 16 restrictions:

More than 55,000 tons of copper. Faucets alone would have used 35,000 lb of brass.

More than 150,000 tons of steel girders. Lumber is taking most of the loads.

NE Steels Expanded in Sweeping Revision

New NE Specifications as released by the AISI, Aug. 14, 1942

TO meet an unanticipated shortage in molybdenum and a progressive tightening of other critical alloying materials, three new National Emergency steels—the 9400, 9500, and 9600 series—have been developed by the fast emergency action of the Technical Committee on Alloy Steel of the American Iron & Steel Institute, working under the chairmanship of John Mitchell, Carnegie-Illinois Steel Corp.

The new 9400 series was developed in the unprecedented time of 10 days after an urgent request was received from the WPB by C. M. Parker, secretary of the AISI General Technical Committee, to revise and expand the NE steels to alleviate growing shortages in critical alloying metals. These shortages included the sudden and unexpected development of a shortage of molybdenum. Mr. Parker immediately telephoned metallurgists in five steel-producing companies, setting their laboratories to work on a 24-hr daily basis in devising specifications, melting experimental heats, forging bars, making chemical analyses, and running hardenability and physical-property tests. Ten days later, after numerous telephone conferences to exchange data among the five metallurgists and AISI headquarters, and after 46 heats of steel had been melted in the coordinated laboratory work, the new series of NE steels was submitted to, and summarily approved by, the WPB.

In the revised and expanded NE steel specifications published herewith, it will be noted that the former SAE-AISI 1300 carbon-manganese steels; the former SAE-AISI 9200 silico-manganese and silico-manganese-chrome steels; and the former SAE-AISI 52,100 carbon-chrome steels, are now designated as NE 1300, NE 9200, and NE 52,100 series, respectively. This change was made to eliminate confusion with reference to priorities of these steels—to show that they do not require as high priorities as do special alloy steels. The revision also includes the elimination of a number of the higher molybdenum steels in the manganese-molybdenum series. It is recommended that the properties of the eliminated steels can be duplicated in steels of other series of NE steels. The 8600, 8700, and 9200 series of NE steels, it will be noted, have been left unchanged in the revision. The three new series of steels employ greater percentages of silicon and manganese to offset reductions in other components, such as nickel, molybdenum, and/or chromium, and to utilize more fully the residuals in the scrap.

Charts giving physical properties and hardenability data of the new NE steels have just been made available by the American Iron & Steel Institute, 350 Fifth Ave., New York, N. Y.

★

Army to Honor Automotive Skills

Army motor-vehicle drivers and mechanics are receiving qualification badges, such as have been heretofore restricted to those proficient in sharpshooting, for example. Below

(Continued on page 26)

Carbon-Manganese Steels

	C	Mn	Si		C	Mn	Si
NE 1330	0.28/0.33	1.60/1.90	0.20/0.35	NE 1345	0.43/0.48	1.60/1.90	0.20/0.35
NE 1335	0.33/0.38	1.60/1.90	0.20/0.35	NE 1350	0.48/0.53	1.60/1.90	0.20/0.35
NE 1340	0.38/0.43	1.60/1.90	0.20/0.35				

Manganese-Molybdenum Steels

	C	Mn	Si	Cr	Ni	Mo
NE 8020	0.18/0.23	1.00/1.30	0.20/0.35			0.10/0.20
NE 8022	0.20/0.25	1.00/1.30	0.20/0.35			0.10/0.20
NE 8339	0.35/0.42	1.30/1.60	0.20/0.35			0.20/0.30
*NE 8442	0.40/0.45	1.30/1.60	0.20/0.35			0.30/0.40

Chrome-Nickel-Molybdenum Steels

	C	Mn	Si	Cr	Ni	Mo
NE 8613	0.12/0.17	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.15/0.25
NE 8615	0.13/0.18	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.15/0.25
NE 8617	0.15/0.20	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.15/0.25
NE 8620	0.18/0.23	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.15/0.25
NE 8630	0.28/0.33	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.15/0.25
NE 8715	0.13/0.18	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.20/0.30
NE 8720	0.18/0.23	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.20/0.30
NE 8722	0.20/0.25	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.20/0.30
NE 8735	0.33/0.38	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.20/0.30
NE 8739	0.35/0.40	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.20/0.30
NE 8744	0.40/0.45	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.20/0.30
NE 8749	0.45/0.50	0.70/0.90	0.20/0.35	0.40/0.60	0.40/0.60	0.20/0.30
*NE 8949	0.45/0.50	1.00/1.30	0.20/0.35	0.40/0.60	0.40/0.60	0.30/0.40

Silico-Manganese and Silico-Manganese-Chrome Steels

	C	Mn	Si	Cr	Ni	Mo
NE 9255	0.50/0.60	0.70/0.95	1.80/2.20			
NE 9260	0.55/0.65	0.75/1.00	1.80/2.20			
NE 9262	0.55/0.65	0.75/1.00	1.80/2.20	0.20/0.40		

Manganese-Silicon-Chrome Steels

	C	Mn	Si	Cr	Ni	Mo
NE 9630	0.28/0.33	1.20/1.50	0.40/0.60	0.40/0.60		
NE 9635	0.33/0.38	1.20/1.50	0.40/0.60	0.40/0.60		
NE 9637	0.35/0.40	1.20/1.50	0.40/0.60	0.40/0.60		
NE 9640	0.38/0.43	1.20/1.50	0.40/0.60	0.40/0.60		
NE 9642	0.40/0.45	1.30/1.60	0.40/0.60	0.40/0.60		
NE 9645	0.43/0.48	1.30/1.60	0.40/0.60	0.40/0.60		
NE 9650	0.48/0.53	1.30/1.60	0.40/0.60	0.40/0.60		

Manganese-Silicon-Chrome-Nickel-Molybdenum Steels

	C	Mn	Si	Cr	Ni	Mo
NE 9415	0.13/0.18	0.80/1.10	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9420	0.18/0.23	0.80/1.10	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9422	0.20/0.25	0.80/1.10	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9430	0.28/0.33	0.90/1.20	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9435	0.33/0.38	0.90/1.20	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9437	0.35/0.40	0.90/1.20	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9440	0.38/0.43	0.90/1.20	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9442	0.40/0.45	1.00/1.30	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9445	0.43/0.48	1.00/1.30	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
NE 9450	0.48/0.53	1.20/1.50	0.40/0.60	0.20/0.40	0.20/0.40	0.08/0.15
*NE 9537	0.35/0.40	1.20/1.50	0.40/0.60	0.40/0.60	0.40/0.60	0.15/0.25
*NE 9540	0.38/0.43	1.20/1.50	0.40/0.60	0.40/0.60	0.40/0.60	0.15/0.25
*NE 9542	0.40/0.45	1.20/1.50	0.40/0.60	0.40/0.60	0.40/0.60	0.15/0.25
*NE 9550	0.48/0.53	1.20/1.50	0.40/0.60	0.40/0.60	0.40/0.60	0.15/0.25

Carbon-Chrome Steels

	C	Mn	Si	Cr	Ni	Mo
NE 52100 A	0.95/1.10	0.25/0.45	0.20/0.35	0.40/0.60	0.35 max.	0.08 max.
NE 52100 B	0.95/1.10	0.25/0.45	0.20/0.35	0.90/1.15	0.35 max.	0.08 max.
NE 52100 C	0.95/1.10	0.25/0.45	0.20/0.35	1.30/1.60	0.35 max.	0.08 max.

* Recommended for large sections only.

New Aero (NE) Steels Devised to Expedite Production and Conserve Scarce Alloys

AS A PART of the National Emergency (NE) Steel Specifications project, which has the objective of standardizing production of steel products, a Technical Advisory Committee on Aeronautical Steels was formed under the chairmanship of Mr. J. B. Johnson, Chief, Materiel Laboratory, Air Corps, Wright Field. The membership of this Committee is shown on page 3.

The Committee was charged with the responsibility of selecting from among the available specifications a limited number which would cover all the various aircraft requirements. A second phase dealt with the development of alternate steels which could be used to replace the conventional low alloy steels to meet the needs for conservation of critical alloying elements. A third phase dealt with simplification and standardization of sizes, which by agreement has been referred to the SAE Aircraft Materials and Processes Coordinating Subdivision.

The first part of this work resulted in the selection of a list of conventional low alloy and corrosion-resistant steels covering bar, sheet and tubing which the Committee felt should provide for all the needs of aircraft producers with the exception of a few highly specialized steels which had very limited application. Work on the second part of the program is not yet completed but has resulted in the adoption of a tentative list of alternate steels. These substitute steels, which are termed National Emergency Aeronautical Steels, have entirely new compositions and have been so selected as to permit the most advantageous use of critical alloying elements, much of which are contained in the scrap from which these alternate steels are produced. The compositions of these alternate steels have been set up in such manner as to provide properties comparable to those of the conventional low alloy steels, to fully meet all

performance requirements, and to make available a larger tonnage of steel for aircraft production.

Changing conditions which apply to critical alloying elements and the need for a comprehensive program of tests which are required in making substitutions have prevented the establishment of a list of specifications which might be considered standard over any length of time. In order to overcome this difficulty, the Administrative Committee of NESS has authorized the publication of the two lists of steels as above described. Publication is being made at this time in order that the entire industry may have knowledge of the recommendations of this Committee to the end that all concerned may actively cooperate in this standardization program. The Army Air Forces and the Navy Bureau of Aeronautics have authorized aircraft fabricators to investigate the properties of these National Emergency Aeronautical Steels with a view to their utilization as standard steels. This program of test work has reached the stage where many manufacturers of airframes, engines, propellers and accessories have undertaken tests to determine the properties of these steels. Test results have been most encouraging. In many cases, the new steels, even though in some cases having less total alloy content than those which they are designed to replace, have shown superior properties. Laboratory and model tests are in progress both in this country and in England and it is planned to disseminate the results of this test program as widely and as quickly as possible.

This entire program is expected to facilitate production of aircraft, to effect large savings of critical materials and to go far in achieving the present goal in the 1942-43 aircraft production program.

List of Preferred Specifications for Aeronautical Steels

As Recommended to the War Production Board by the Technical Advisory Committee on Aeronautical Steels

National Emergency Steel Specifications

In order to standardize the production of aeronautical steels as much as is practicable under the changing conditions of war-time production and conservation of critical alloying elements, the WPB-NESS Technical Advisory Committee for Aeronautical Steels has established a list of preferred specifications for steels, which are recommended for use by the Aviation Industry, for the fabrication of airframes, engines, propellers and accessories. This list is submitted in the form of two tables.

Table 1 (page 2) is a list of specifications covering carbon, low alloy and corrosion resistant steels which are now used extensively and for which applications are well established. Both government and commercial

specifications are listed, which permits continuation of present practices of designations on drawings, and in ordering and stocking these materials. This list does not include specifications for the steels which are used in relatively small quantities by a few individual fabricators for special applications.

Table 2 (page 3) is a list of specifications based upon new chemical compositions selected by the WPB. These compositions effect the greatest conservation of alloying elements contained in steel scrap. They are submitted as preferred alternate steels for the LOW ALLOY steels listed in Table 1. These steels may be used after the fabricator of the airframe, engine, propeller or acces-

sory is satisfied that the application does not adversely affect the performance of the equipment for which he is responsible, and after he has received the necessary approval from the purchaser of the equipment.

The basic number of the specification is listed in the tables. However, the issue in effect at the date of invitation for bids or inquiry applies.

All fabricators of airframes, engines, propellers and accessories are requested to adhere to these lists of preferred specifications as closely as possible and to effect the greatest practical conservation of critical alloying elements by the proper selection of applicable compositions.

TABLE I
Conventional Aeronautical Steel Specifications

General Trade Designation	Government Specifications					Commercial Specs.
	Army-Navy	Army	Navy	NAF	Air Corps	
CARBON STEELS - Bars and Forgings						
Screw Stock	(1112)	—	—	46S17	—	AMS 5010
1.3 Manganese, Free Cutting	(1117)	—	—	—	—	AMS 5022
1.5 Manganese, Free Cutting	(1137)	—	—	—	—	AMS 5024
1.5 Manganese, Free Cutting, Heat Treated	(1137)	—	—	—	—	AMS 5025
	(1015)	—	—	46S32	—	AMS 5060
	(1022)	AN-QQ-S-646	—	—	—	AMS 5070
	(1035)	AN-S-4	—	—	EMS16	AMS 5080
	(1095)	AN-S-5	—	—	—	AMS 5132
CARBON STEELS - Sheet and Strip						
Deep Drawing, Annealed, Cold Rolled	(1010)	—	—	—	—	AMS 5040
Cold Rolled	(1010)	—	—	—	—	AMS 5042
Half Hard	(1010)	—	—	—	—	AMS 5044
Cold Rolled	(1020)	AN-S-11	—	—	—	—
Annealed	(1070)	—	—	47S27	—	AMS 5120
Annealed	(1095)	AN-QQ-S-666	—	—	—	AMS 5121
Hard	(1095)	—	—	—	—	AMS 5122
CARBON STEELS - Wire						
Zinc Coated - Soft	(1015)	AN-QQ-W-435	—	—	—	AMS 5033
Zinc Coated - Hard	—	AN-QQ-W-429	—	—	—	—
Music Wire Commercial	(1080)	—	—	—	—	AMS 5110
Music Wire Best Quality	(1090)	AN-QQ-W-441	—	—	—	AMS 5112
Heat Treated	(1070)	—	—	47S4	—	AMS 5115
CARBON STEELS - Tubing						
Seamless - Annealed	(1010)	—	—	—	—	AMS 5050
Welded - Annealed	(1010)	—	—	—	—	AMS 5053
Seamless	(1025)	AN-WW-T-846	—	—	—	AMS 5075
Welded	(1025)	AN-T-4	—	—	—	AMS 5077
LOW ALLOY STEELS - Bars and Forgings						
5 Ni	(2512)	—	57-107-18	EMS 3	—	AMS 6240
5 Ni	(2517)	—	—	—	—	AMS 6242
3.5 Ni, 1.5 Cr	(3310)	—	57-107-22	EMS 4 & 5	—	AMS 6250
3.5 Ni, 1.5 Cr	(3310)	—	—	—	—	AMS 6252
3.5 Ni, 1.5 Cr	(3316)	—	—	—	—	AMS 6253
3.5 Ni, 1.5 Cr	(3318)	—	—	—	—	AMS 6254
1.8 Ni, 0.25 Mo	(4615)	—	—	46S32	EMS 8 AC10240	AMS 6290
1.8 Ni, 0.25 Mo	(4617)	—	—	—	—	AMS 6292
1.8 Ni, 0.25 Mo	(4620)	—	—	—	—	AMS 6294
1.8 Ni, 0.25 Mo	(4635)	—	—	—	EMS 69	AMS 6310
1.8 Ni, 0.25 Mo	(4640)	—	—	—	—	AMS 6312
105,000 TS	(4640)	—	—	—	—	AMS 6315
1.8 Ni, 0.25 Mo 125,000 TS	(4640)	—	—	—	—	AMS 6317
Carbon-Molybdenum	(4037)	AN-S-9	—	—	—	AMS 6330
1.25 Ni, 0.6 Cr	(3135)	AN-QQ-S-690	—	—	—	AMS 6330
1 Cr, 0.2 Mo	(4130)	AN-QQ-S-684	—	—	—	AMS 6370
1 Cr, 0.2 Mo	(4137)	AN-QQ-S-752	—	—	—	AMS 6380
1 Cr, 0.2 Mo	(4140)	—	—	—	—	AMS 6382
1.8 Ni, 0.75 Cr, 0.25 Mo	(4328)	—	—	—	—	AMS 6410
1.8 Ni, 0.75 Cr, 0.25 Mo	(4337)	AN-QQ-S-756	—	—	—	AMS 6412
1.8 Ni, 0.75 Cr, 0.25 Mo	(4340)	AN-QQ-S-756	—	—	—	AMS 6415
1.35 Cr	(52100)	—	57-107-13	EMS 70	—	AMS 6440
Chromium, Vanadium	(6150)	AN-QQ-S-687	—	—	—	AMS 6448
Nitralloy	(—)	—	57-107-28	EMS 47	—	AMS 6470
Nitralloy	(—)	—	—	46-S-30	—	—
LOW ALLOY STEELS - Sheet and Strip						
1 Cr, 0.2 Mo	(4130)	AN-QQ-S-685	—	—	—	AMS 6350
1 Cr, 0.2 Mo	(4135)	AN-QQ-S-686	—	—	—	AMS 6352
Chrome-Vanadium	(6150)	—	—	—	—	AMS 6455
Low-Alloy	(—)	AN-QQ-S-676	—	—	—	—
No Commercial Designation	—	—	—	—	—	—
LOW ALLOY STEELS - Wire						
Chrome-Vanadium Annealed	(6150)	—	48-7	—	EMS 20	AMS 6450
Chrome-Vanadium Annealed	(6150)	—	—	W-42	—	—

NOTE: Tubing may also be ordered under the specifications listed for Bars and Forgings. The properties and tolerances in such cases shall be as agreed upon by vendor and purchaser.

General Trade Designation	Government Specifications					Commercial Specs.
	Army-Navy	Army	Navy	NAF	Air Corps	
LOW ALLOY STEELS - Tubing						
Seamless, 1 Cr, 0.2 Mo Normalized (4130)	AN-WW-T-850	—	—	—	—	AMS 6360
Seamless, 1 Cr, 0.2 Mo 125,000 TS (4130)	AN-WW-T-850	—	—	—	—	AMS 6361
Seamless, 1 Cr, 0.2 Mo 150,000 TS (4130)	AN-WW-T-850	—	—	—	—	AMS 6362
Seamless, 1 Cr, 0.2 Mo 180,000 TS (4130)	AN-WW-T-850	—	—	—	—	AMS 6363
Seamless, 1 Cr, 0.2 Mo Normalized (4135)	AN-WW-T-852	—	—	—	—	AMS 6365
Seamless, 1 Cr, 0.2 Mo 125,000 TS (4135)	AN-WW-T-852	—	—	—	—	AMS 6366
Seamless, 1 Cr, 0.2 Mo 150,000 TS (4135)	AN-WW-T-852	—	—	—	—	AMS 6367
Seamless, 1 Cr, 0.2 Mo 180,000 TS (4135)	AN-WW-T-852	—	—	—	—	AMS 6368
Seamless, 1 Cr, 0.2 Mo 200,000 TS (4135)	AN-WW-T-852	—	—	—	—	AMS 6369
Welded, 1 Cr, 0.2 Mo Normalized (4130)	AN-T-3	—	—	—	—	AMS 6510
CORROSION RESISTANT STEELS - Bars and Forgings						
18 Cr, 8 Ni (Type 302)	AN-QQ-S-771	—	—	—	—	—
18 Cr, 8 Ni 2.5 Mo (Type 316)	AN-QQ-S-771	—	—	—	—	—
16 Cr, 2 Ni (Type 431)	AN-QQ-S-770	—	—	—	—	—
13 Cr, Free Machining (Type 416)	—	—	46S18	—	—	AMS 5610
13 Cr, 1 Ni (Type 414)	—	—	—	AC 10080	—	AMS 5615
17 Cr (Type 440)	—	—	46S18	—	—	AMS 5630
17 Cr, Free Machining (Type 416)	—	—	—	—	—	AMS 5632
18 Cr, 8 Ni Free Machining (Type 303)	AN-QQ-S-771	—	—	—	—	AMS 5640
18 Cr, 8 Ni Swaging (Type 302)	AN-QQ-S-772	—	—	46S18	—	AMS 5641
18 Cr, 8 Ni Heat Resistant (Type 321 & 347)	—	—	—	46S18	—	AMS 5645
Cr, Ni, W, Valve (Type 321 & 347)	—	—	—	—	EMS 12	AMS 5700
Cr, Ni, Si, Valve (Type 316)	—	—	—	—	EMS 11	AMS 5705
Cr, Si, Ni, Valve (Type 316)	—	—	—	—	—	AMS 5710
CORROSION RESISTANT STEELS - Sheet and Strip						
18 Cr, 8 Ni Heat Resistant (Type 321 & 347)	AN-QQ-S-757	—	—	—	—	AMS 5510
18 Cr, 8 Ni Deep Forming (Type 302)	AN-QQ-S-772	—	—	—	—	AMS 5515
18 Cr, 8 Ni Cold Rolled, Annealed (Type 302)	AN-QQ-S-772	—	—	—	—	AMS 5516
18 Cr, 8 Ni Cold Rolled, 125,000 TS (Type 302)	AN-QQ-S-772	—	—	—	—	AMS 5517
18 Cr, 8 Ni Cold Rolled, 150,000 TS (Type 302)	AN-QQ-S-772	—	—	—	—	AMS 5518
18 Cr, 8 Ni Cold Rolled, 185,000 TS (Type 302)	AN-QQ-S-772	—	—	—	—	AMS 5519
18 Cr, 8 Ni 2.5 Mo (Type 316)	AN-QQ-S-772	—	—	—	—	—
CORROSION RESISTANT STEELS - Wire						
18 Cr, 8 Ni Welding (Type 347)	—	—	46 R 2	—	AC10286	AMS 5660
18 Cr, 8 Ni Annealed (Type 302)	—	—	—	—	—	AMS 5665
18 Cr, 8 Ni Spring (Type 302)	—	—	—	—	—	AMS 5688
18 Cr, 8 Ni, 2.5 Mo Spring (Type 316)	AN-QQ-W-423	—	—	—	—	—
18 Cr, 8 Ni, 2.5 Mo Screen (Type 316)	—	—	—	—	—	AMS 5690
CORROSION RESISTANT STEELS - Tubing						
18 Cr, 8 Ni Seamless, Heat Resistant (Type 347 & 321)	AN-WW-T-858	—	—	—	—	AMS 5870
18 Cr, 8 Ni Welded Heat Resistant (Type 347 & 321)	AN-WW-T-861	—	—	—	—	AMS 5875
18 Cr, 8 Ni (Type 302)	AN-WW-T-855	—	—	—	—	—

NOTE: Tubing may also be ordered under the specifications listed for Bars and Forgings. The properties and tolerances in such cases shall be as agreed upon by vendor and purchaser.

Table II
TENTATIVE ALTERNATE STEEL SPECIFICATIONS
 Incorporating
 Chemical Compositions Recommended by War Production Board

ALTERNATE STEEL							Aeronautical Material Specifications for which tentative alternate steels are suggested for investigation (4)
Tentative AMS No.	Form	Carbon	Manganese	Nickel	Chromium	Molybdenum	
AMS 6260	Bar	0.08-0.13	0.70-0.90	2.00-2.50	0.80-1.10	0.30-0.40	AMS 6250 and AMS 6240
AMS 6262	Bar (1)	0.08-0.13	0.70-0.90	2.00-2.50	0.80-1.10	0.30-0.40	AMS 6252
AMS 6263	Bar	0.11-0.16	0.70-0.90	2.00-2.50	0.80-1.10	0.30-0.40	AMS 6253
AMS 6264	Bar	0.15-0.20	0.70-0.90	2.00-2.50	0.80-1.10	0.30-0.40	AMS 6254 and AMS 6242
AMS 6270	Bar	0.12-0.17	0.70-0.90	0.40-0.60	0.40-0.60	0.15-0.25	AMS 6290
AMS 6272	Bar	0.15-0.20	0.70-0.90	0.40-0.60	0.40-0.60	0.15-0.25	AMS 6292
AMS 6274	Bar	0.18-0.23	0.70-0.90	0.40-0.60	0.40-0.60	0.15-0.25	AMS 6294
AMS 6280	Bar	0.27-0.33	0.70-0.90	0.40-0.60	0.40-0.60	0.15-0.25	AMS 6370
AMS 6320	Bar	0.33-0.38	0.75-1.00	0.40-0.60	0.40-0.60	0.20-0.30	AMS 6310, AMS 6330 and AMS 6380
AMS 6322	Bar	0.38-0.43	0.75-1.00	0.40-0.60	0.40-0.60	0.20-0.30	AMS 6312, AMS 6332, (6) AMS 6380
AMS 6325	Bar (2)	0.38-0.43	0.75-1.00	0.40-0.60	0.40-0.60	0.20-0.30	AMS 6382 and AMS 6448
AMS 6327	Bar (3)	0.38-0.43	0.75-1.00	0.40-0.60	0.40-0.60	0.20-0.30	AMS 6315 and AMS 6336 (6)
AMS 6355	Sheet	0.27-0.33	0.70-0.90	0.40-0.60	0.40-0.60	0.15-0.25	AMS 6317 and AMS 6337 (6)
AMS 6357	Sheet	0.33-0.38	0.75-1.00	0.40-0.60	0.40-0.60	0.20-0.30	AMS 6350
AMS 6530	Tubing	0.27-0.33	0.70-0.90	0.40-0.60	0.40-0.60	0.15-0.25	AMS 6352
AMS 6535	Tubing	0.33-0.38	0.75-1.00	0.40-0.60	0.40-0.60	0.20-0.30	AMS 6360
							AMS 6365

(1) Same as 6260 except for Hardenability requirements

(2) Heat Treated - 105,000 psi

(3) Heat Treated - 125,000 psi

(4) The application of the alternate steels may be subject to approval by the agency procuring the equipment

(5) The limits on the chemical elements in the table are for the mill or heat analysis. Limits based on check analyses of the finished product are given in the individual specifications

(6) Steels conforming to the SAE 3100 series were deleted from Table I since these steels are non-standard for aircraft usage and are being replaced by other chemical compositions

Percentage of Phosphorus, Sulfur and Silicon of all of the above steels.

Phosphorus - 0.040 Maximum

Sulfur - 0.040 Maximum

Silicon - 0.20 - 0.35

Technical Advisory Committee on (NE) Aeronautical Steels

Chairman: J. B. Johnson, Chief, Material Section, Material Division, Air Corps, USA, Wright Field, Dayton, Ohio.

Secretary: John Mitchell, Metallurgical Engineer, Alloy Division, Carnegie-Illinois Steel Corp., Pittsburgh, Pa.

Government:

Representing the War Department:

J. B. Johnson, Chief, Material Section, Material Division, Air Corps, USA, Wright Field, Dayton, Ohio.

Representing the Navy Department:

Lt. W. P. Goepfert, Bureau of Aeronautics, Washington, D. C. Alternate: N. Promisel, Met., Bureau of Aeronautics, Washington, D. C.

Representing Army-Navy Aeronautical Board:

Lt. S. D. Daniels, Army Air Corps, Washington, D. C. Alternate: Lt. T. W. Johnson, Navy Air Corps, Washington, D. C.

Representing the Federal Specifications Executive Committee:

Lt.-Col. John H. Frye, Office, Chief of Ordnance, Industrial Service, Washington, D. C.

Industrial Consumers & General Interests:

L. D. Bonham, Process Engineer, Lockheed Aircraft Corp., Burbank, Calif.

H. A. Campbell, Research Engineer, Solar Aircraft Co., San Diego, Calif.

B. Clements, Chief Metallurgist, Wright Aeronautical Corp., Paterson, N. J.

Eric Dudley, Materials & Standards Engineer, Airplane Division, Curtiss Wright Corp., Buffalo, N. Y.

W. H. Graves, Chief Metallurgist, Packard Motor Car Co., Detroit, Mich.

R. B. Gray, Chief of Laboratories, Glenn L. Martin Co., Baltimore, Md. Alternate: Paul W. Boone, Glenn L. Martin Co., Baltimore, Md.

A. W. F. Green, Materials Engineer, Pratt & Whitney Aircraft Division, United Aircraft Corp., East Hartford, Conn.

R. L. Heath, Chief Metallurgist, Allison Division, General Motors Corp., Indianapolis, Ind.

Horace C. Knerr, President, Metallurgical Laboratories, Inc., Philadelphia, Penn.

R. R. Moore, Senior Metallurgist, Naval Aircraft Factory, U. S. Navy Yard, Philadelphia, Penn.

C. L. Stevens, Ford Motor Co., Dearborn, Mich.

Producers:

Bar, Sheets, and Wire

W. J. Beuchling, Chief Metallurgist, Copperweld Steel Co., Warren, Ohio.

W. G. Bischoff, Metallurgical Engineer, Steel & Tubes Div., Timken Roller Bearing Co., Canton, Ohio.

L. L. Ferrall, Metallurgical Engineer, Rotary Electric Steel Co., Detroit, Mich.

John Mitchell, Metallurgical Engineer, Alloy Div., Carnegie-Illinois Steel Corp., Carnegie Bldg., Pittsburgh, Penn.

M. J. R. Morris, Chief Metallurgical Engineer, Republic Steel Corp., Massillon, Ohio.

E. T. Walton, Supt. of Metallurgy & Inspection, Crucible Steel Co. of America, Midland, Penn.

Henry Wysor, Metallurgical Engineer, Bethlehem Steel Company, Bethlehem, Pa.

Tubes

J. S. Adelson, Chief Metallurgist, Steel Tubes Div., Republic Steel Corp., Cleveland, Ohio.

H. R. Lewis, Chief Metallurgist, Ohio Seamless Tube Co., Shelby, Ohio.

A. J. Williamson, Chief Metallurgist, Summerill Tubing Co., Bridgeport, Pa.

E. C. Wright, Chief Metallurgist, National Tube Co., Frick Bldg., Pittsburgh, Pa.

Stainless—Flat and Bars

L. S. Bergen, Associate Director, Metallurgy & Research, Crucible Steel Co. of America, 405 Lexington Ave., New York, N. Y.

E. H. Davidson, Metallurgical Engineer, Structural, Plate-Stainless Steels, Carnegie-Illinois Steel Corp., 1208 Carnegie Bldg., Pittsburgh, Penn.

B. H. DeLong, Chief Metallurgist, Carpenter Steel Co., 101 West Bern St., Reading, Penn.

H. A. Grove, Metallurgist, Alloy Steel Division, Republic Steel Corp., Massillon, Ohio.

R. A. Lincoln, Metallurgical Engineer, Allegheny Ludlum Steel Corp., Brackenridge, Penn.

Consulting Members:

J. G. Morrow, Chief Metallurgist, Steel Co. of Canada Ltd., Hamilton, Ontario.

H. L. Chamberlain, Supply Directorate, British Raw Materials Mission, 1801 K St., Washington, D. C.

F. H. Saniter, Supply Directorate, British Raw Materials Mission, 1801 K St., NW., Washington, D. C.

SAE NATIONAL **AIRCRAFT PRODUCTION MEETING**

and
**Aircraft Engineering
Display**

Oct. 1 - 3

**Hotel Biltmore
Los Angeles**



U. S. Navy photo.

KEYED EXCLUSIVELY to war problems, this 1942 SAE National Aircraft Production Meeting will feature papers and intimate technical discussion on ways and means to perpetuate the superiority of United States' aviation products.

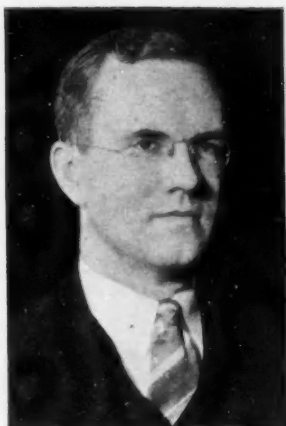
NEW PROCESSES, new designs, new methods — drawn together from every branch of the aeronautical industry — will form the basis of this great annual idea-exchange.

TOPICS WILL INCLUDE: automatic engine controls; high production sheet metal formings; impact

extrusions and cold pressing of aluminum alloy airplane parts; flash welding; spot welding; non-critical materials for airframes; template reproduction by dry offset printing; wood-plastics in mass production of aircraft and many others.

LEADING AERONAUTICAL ENGINEERS will tell the practical story of their most recent development work. General chairman of the meeting is Arthur E. Raymond, vice president in charge of engineering, Douglas Aircraft Co. Chairman of the Aircraft Engineering Display is J. H. Kindelberger, president, North American Aviation, Inc.

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John P. Flannery
Syracuse



Peter F. Rossmann
Buffalo



SECTION CH



J. Howard Pile
Chicago



Allen Guiberson
Texas Group



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Canadian



E. W. Austin
Detroit



Fred W. Twining
Northern California



Ernest J. Stockum
Dayton



C. H. Miller
Cleveland



J. Ray Kessler
Oregon

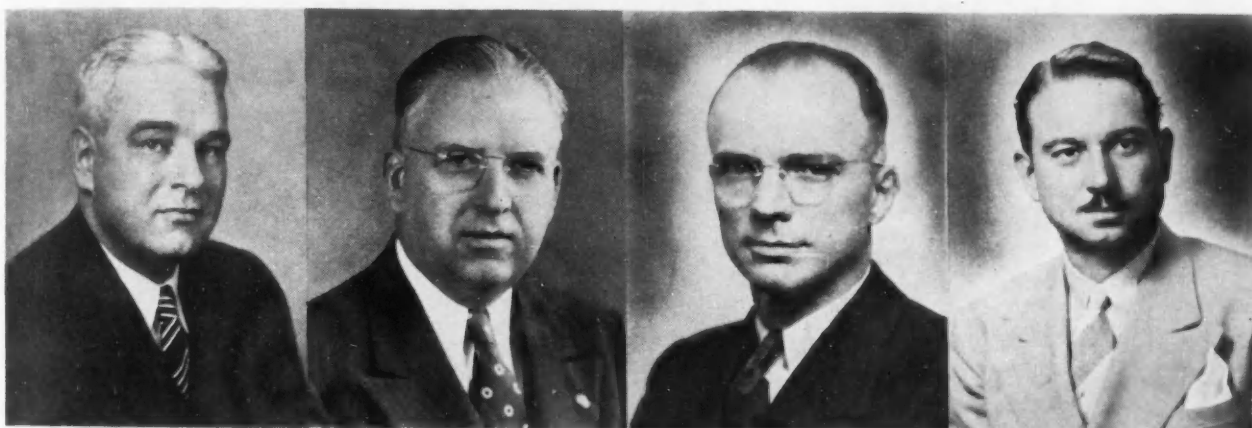
N CHAIRMEN

for 1942-1943



Herbert H. Happersberg
Metropolitan

★ ★ ★ ★ ★



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New England

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Southwest Group

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Baltimore

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for 1942-1943

(Concluded)



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Indiana



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L. C. Lichty
Southern New England



Stuart Nixon
SAE Muskegon Club



R. G. Horridge
Kansas City



M. S. Anderson
SAE Club of Colorado

New Army-Navy Flag Now Flying Over SAE Members



U. S. Army Photo

Army-Navy Award flag with Army portion on red field and Navy on blue. Oak leaves (left) signify strength, and laurel leaves, victory. New flag supersedes all others, and is joint recognition by Army and Navy of outstanding production achievement in war industries.



New Army-Navy Production Award pin will be presented to employees of plants winning joint Army-Navy Production Award flag. The "E" stands for excellence in Navy's code.

EIGHT of the 20 industrial plants first awarded the Army-Navy Production Award in recognition of outstanding performance on war work have executives and employees who are SAE members. Under Secretary of the Navy James V. Forrestal and Under Secretary of War Robert P. Patterson recently announced the first joint Army-Navy production award. The eight:

Bendix Aviation Corp. (Bendix Radio Division), Baltimore, Md.

Boeing Airplane Co., Seattle, Wash.

Chrysler Corp. (Detroit Tank Arsenal), Centerline, Mich.

E. I. DuPont de Nemours Co. (Indiana Ordnance Works), Charlestown, Ind.

General Machinery Ordnance Corp. (U. S. Navy Ordnance Plant), South Charleston.

General Motors Corp., Oldsmobile Division, Lansing, Mich.

United Aircraft Corp., Hamilton Standard Propeller Division, East Hartford, Conn.

Universal Unit Power Shovel Corp., Milwaukee, Wis.

More recent awards to companies employing SAE members include:

Aircraft Radio Corp., Boonton, N. J.

Aluminum Co. of America (Die Casting Division), Garwood, N. J.

American Bearing Corp., Indianapolis, Ind.

Buffalo Pumps, Inc., North Tonawanda.

Carbide & Carbon Chemicals Corp., South Charleston, W. Va.

Electric Boat Co. (Elco Naval Division), Bayonne, N. J.

Foster Wheeler Corp., Dansville, N. Y.

Ingersoll Rand Co., Athens, Pa.

Sperry Gyroscope Co., Inc. (Five Plants), Brooklyn, N. Y.

Wright Aeronautical Corp., five plants.

Autocar Co., Ardmore, Pa.

Blanchard Machine Co., Cambridge, Mass.

Briggs & Stratton Corp., Milwaukee.

Firestone Tire & Rubber Co., Akron.

General Machinery Corp., Hamilton, Ohio.

AC Spark Plug Division, G.M.C., Flint, Mich.

Chevrolet Motor Division, G.M.C., Detroit.

Hooker Electro Chemical Co., Niagara Falls, N. Y.

Leland-Gifford Co., Worcester, Mass.

Reed-Prentice Corp., Worcester, Mass.

Southwest Boat Corp., Southwest Harbor, Me.

Timken-Detroit Axle Co., three plants.

Towmotor Co., Cleveland.

White Motor Co., Cleveland.

WPB Will Study G-B's Steel Use

BECAUSE armament production by the automotive and other mass production industries is outrunning steel capacity in both the U. S. and Great Britain, Donald M. Nelson, WPB chairman and James S. Knowlson, his deputy, are making a study of joint production problems.

Its scope:

- Methods of increasing total U.S.-G.B. steel output;

- British system of control of steel production, allocation, and end use;

- Coordination, in so far as possible, of the U.S. and British production of steel plates, structural shapes, alloys, etc., to develop a combined balance;

- Study rolling mill capacities to determine whether more ingots should be shipped to Britain, or *vice versa*;

- Which fronts are to be supplied by U.S. and which by G.B.;

- Study of British scrap collection and recovery methods;

- Study of British conservation and substitution techniques, and

- Balance of British war and civilian use

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New Army Corps To Speed Traffic

(Continued from page 15)

the "nerve center" of the new corps, and will be manned by outstanding traffic managers enlisted from industry. The United States has been divided into 51 areas, each in charge of one of these experts who will be commissioned in the Army. It will be their business to keep the flow of traffic smooth by cooperating with their neighboring areas to prevent traffic congestion.

The **Highway Division** will have seven operating branches:

- Mass Personnel Transportation Branch, headed by Fred C. Taylor, who was largely responsible for developing the so-called Pontiac Plan sponsored by the State of Michigan to relieve congestion of war workers in the factory areas;

- Highway Engineering Branch, under Major C. R. Weaver, formerly engineer for the Automotive Safety Foundation;

- Field Operation & Training, with Major Karl F. Wihtol in charge;

- Administrative, under Capt. Cecil A. Jones;

- Special Equipment Branch, headed by Major J. W. Dineen, formerly with General Motors Corp., charged with development of vehicles for use by the Army on the continents of Europe, Africa, the Far and Near East, and

- Motor Carrier Liaison Branch under John Bridge. This branch will work out plans with appropriate Federal agencies to prevent unnecessary use of trucks and rubber where other facilities are available, and to keep commercial trucking so organized as to have them ready for instant emergency use. The branch will also expedite highway freight by removing unduly restrictive state and local regulations on size and weight of vehicles and other barriers to transportation.

'One Shot' Firm Formed To Recover Steel for War

The Steel Recovery Corp., a subsidiary of the Reconstruction Finance Corp., through its subsidiary the Metals Reserve Co., has been established by WPB to:

- Purchase from manufacturers and warehouses stocks of "frozen" iron and steel, and

- Sell such steel to war contractors.

Similar to the Copper Recovery Corp., it will be dissolved when the job is done. Unlike the copper effort, however, it will depend largely upon industrial board members and less upon a staff hired to "survey and analyze the field, and to promulgate policies for materials recovery."

Headquarters are in Pittsburgh, care of the WPB Regional office.

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LUMP, 'Baby' PRP, Widens Control Plan

Limited Use Materials Plan has been announced by WPB to provide a bookkeeping check of materials in hands of, and allocated to, smaller manufacturers who use less than \$5000 worth a quarter. Full details are available at WPB regional offices.

Materials Shortages Sowing Crop Of New Plans, Reorganization Ideas

WAR plants are shutting down because of materials shortages. Top WPB spokesmen define shortages as:

1. "Dislocations," and
2. Actual shortages of materials.

"Dislocations" is a convenient tag for the results of lack of proper scheduling of materials, or for unpreventable changes in end products required by the Army and Navy, or unfortunate but normal miscalculations of total amounts of armaments needed.

Considerable difference of opinion exists in Washington, the SAE Journal has discovered:

- Some ranking WPB authorities maintain that the Production Requirements Plan is the white hope of WPB;
 - Others believe that PRP will fall on its face because there is no guarantee that factories can obtain required materials;
 - A few of the stalwarts hope that the priorities system can be overhauled to effectively distribute materials where and when needed;
 - Many are studying the British system, which long ago abandoned its reliance on priorities. They lean on the hope of reorganizing WPB along these lines—with necessary modifications, and
 - A growing minority thinks that the whole materials control should be taken from WPB and put into the hands of the Army, Navy, and other major procurement agencies. Such plans are numerous, and one is the Contract Production Control scheme where materials would be allotted directly to the manufacturer by the contracting agency. Another plan with considerable off-the-record support would involve reorganizing the materials branches with trained scheduling experts to keep the physical flow of actual materials from refiners and mills to the subcontractors and the contractors.
- Actual shortages of materials are also becoming more and more acute.
- Principal reasons:
- Migration of metal miners from the mines to nearby war factories because of the 2-1 and 3-1 wage differentials (See "Labor Control").
 - Conscription and enlistment of miners to the Army and Navy; and
 - Inadequate physical facilities for increasing production, particularly in the low-grade ore areas.

Last Known Plasticizer Under Allocation Control

Phthalates, largely used as a plasticizer in brake lining, synthetic rubbers, lacquers, numerous plastics and smokeless powders, have been put under complete allocation control (M-203, Aug. 1, 1942), effective Sept. 1.

Use of 5 gal of each type per month, or deliveries of 55 gal of any one type or a total of 110 gal of all types, are not restricted.

This is the fifth type of plasticizer now under control.



Labor Control

To increase output of metals mines, action has begun on four domestic fronts:

- Army has asked its contractors in western states not to hire miners;
- Selective Service issued an order to prevent western miners from migrating to Alaska—where mining wages are higher;
- WPB is concentrating its War Production Drive efforts in the mining areas; and
- War Manpower Commission is making a study, with the Department of Labor and U. S. Employment Service, of idle miners.

Airline Replacements Get Higher Priorities

Airline operators hope they got a break recently when WPB raised their preference rating from A-1-j to A-1-a (P-47, Amendment 2, Aug. 12). When all aircraft production was assigned AA-1 several months ago, airlines found some of their ships grounded because they couldn't get even minor replacement parts.

It may take the Army to help airlines actually get parts, however, because of the distance between the production rating and the new maintenance one. Army officials are depending heavily upon airline transportation for freight and officer transportation.

Army To Honor Automotive Skills

(Continued from page 17)

the basic badge will be suspended bars reading:

- Driver-W (wheeled vehicles);
- Driver-T (half tracks);
- Driver-M (motorcycles) and
- Mechanic.

Requirements for qualification for Driver:

- Pass Army aptitude and drivers' tests;
- Perform minimum of three months' duty without accident or violation of traffic regulations;

- Assigned to duty as driver or assistant.

Requirements for qualification for Mechanic:

- Complete prescribed course, or show sufficient civilian experience to justify skilled rating;
- Perform minimum of three months as mechanic.

Parts Materials Order Is Eased

TO expedite production of automotive replacement parts, WPB has ruled that manufacturers may schedule production of parts without regard for purchase orders or contracts placed with them for other materials on ratings lower than A-1-a.

Amendment No. 1 to Limitation Order L-158, issued Aug. 1, makes this provision.

The amendment applies to essential replacement parts, and covers such equipment for:

- Passenger cars,
- Light, medium, and heavy motor trucks,
- Truck trailers,
- Passenger carriers, and
- Off-the-highway vehicles.

Will Try To Channel Steel

TO channel steel output more directly into vital products, and to balance allotments among manufacturers, WPB has set up a quota system for:

- The various steel products, and
- Each producer.

Recent emphasis on semi-finished steel for shipment abroad, plates, shapes, alloys, rails and rail accessories, and tin plate, for example, has resulted in diversion of steel from bars, sheet, pipe, wire and similar products.

Maximum necessary output of each product will be possible, according to Reese H. Taylor, new chief, Iron & Steel Branch.

In recent months the greatest possible tonnage of steel plates was urged without regard to the effect of this diversion upon other products.

Any decline in plate production will depend upon the relative need for other products, and upon the overall supply of steel ingots. Companies which produce only plates will be expected to continue to produce the highest tonnage possible. Those with a diversified line will be expected to fill their quotas of other products before they turn out any over-quota plates.

Molybdenum Use Again Restricted by WPB Order

Only after approval of melting schedules by WPB may molybdenum be melted, according to a revision of Conservation Order M-110 (Aug. 8).

Melting schedules were provided for in Order M-21-a. The revision was issued to conserve molybdenum, which is becoming more and more scarce because:

- Molybdenum was used largely as a substitute for other more critical materials, and
- Lend-Lease shipments exceeded earlier expectations. (See page 17).

Scrap Scraps

LEAST organized of any widely-publicized war effort is the scrap collection endeavors of the nation.

Basic criticism leveled at the agencies at work on this all-important job is the fact that large sections of the industrial and citizen population are being urged by high-pressure publicity to collect scrap, but practically nothing has been done to:

- Show smaller manufacturing establishments how to segregate scrap efficiently,
- Arrange for a steady flow of the materials to reclaiming plants and mills, and
- Plan for remelting and other reclaiming operations.

Among the recent developments—most of which have been hit-or-miss—are:

- Choking of rubber reclamation plants through the rubber salvage effort developed by the petroleum industry at the request of the President,
- Works Progress Administration's scouring of the country for abandoned rails and other metallic scrap, but discovering no plan had been made to move much of it to steel mills, etc., and
- "Miscalculations" of amounts of waste paper that could be salvaged by paper mills for explosives, resulting in burning thousands of tons of baled paper.

Cooperation of WPB with the organized scrap dealers has begun, after an 18-month rift, however.

But wide publicity is being given to:

- Salvage of monuments, including a lengthy telegram from WPB's conservation boss, Lessing Rosenwald, to Walt Disney for his pair of deer on his front lawn,
- Three releases during four months about the Army's decision to scrap more than 100 World War I tanks,
- Posters urging one and all to "get in the scrap" to lick the Axis, and
- Playup of numerous isolated salvage stunts.

Widespread impression still exists that enough scrap effort is being exerted, and only those who know realize the seriousness of shutdowns of mills because the lack of a coordinated program—including detailed arrangements in respect to shipments of the right kind to the right mills at the right time.

Farm Equipment Makers Relieved of Parts Quotas

Rigid quotas of attachments and repair parts for farm equipment were tossed out the window by WPB, with Amendment No. 1 to Limitation Order L-26 (Dec. 31, 1941) as amended several times.

The newest Amendment No. 1 gives manufacturers a flexibility in the distribution of materials. If the demand for one type of attachment or part exceeds the quota established, materials may be shifted from other attachments or parts to which they have been assigned.

The Amendment says, in lay language:

"Use materials for any parts at your discretion, but don't exceed overall quotas."

Ends Lead Pool As Stocks Climb

Brightest spot in the critical materials picture is the discontinuance of WPB's Lead Pool because current production is outrunning demand.

Inventory control over lead was established by OPM's General Metals Order No. 1, May 1, 1941, and the metal was put under full priorities control on Oct. 4 of that year.

WPB reserves the right to re-establish the pool at any time, however.

Scientists Propose New Alumina Process to WPB

SUBSTANTIAL quantities of clays other than bauxite, such as kaolin, alunite, high-silica bauxite, tailings, etc., has been proposed to WPB by the Advisory Committee on Metals & Minerals, National Academy of Sciences.

These low-grade materials are suggested as additions to bauxite, practically all of which is imported. The first reduction step produces alumina, and the second step reduces this aluminum oxide powder to metallic aluminum.

Pilot plants in several parts of the country should be continued and expanded, the committee reported.

Intensified prospecting was recommended to disclose other minable domestic deposits of these low-grade ores.

Vaniman Heads WPB Automotive Branch

R. L. Vaniman, formerly assistant chief, has been appointed chief of the Automotive Branch, WPB, succeeding Ernest Kanzler (see "Kanzler Is WPB's Chief Troubleshooter," p. 16).

Mr. Vaniman, on leave from the Chrysler Corp., has been with WPB since Jan. 29.

SWPC Is Embarrassingly Hot

WPB is trying to keep its newest hot potato cool, but early publicity emanating from its offices and Congress gave wide hope for many through the Smaller War Plants Corp.

Stemming from the philosophy of giving small business war work because small business was not getting what it thought was its share, Lou E. Holland's organization is at variance with the "win the war" philosophy of the Army procurement officials. Giving expedient lip service to SWPC, a number of top WPB executives are supporting the FUD program. (See "WPB's FUD Gets Results," p. 16.)

They're Saying in Washington...

Battle Of Control

STRUGGLES for control of the armament effort are being intensified down in Washington, now that failure to achieve the President's goals are becoming more apparent in more areas. What were squabbles between agencies have developed into the makings of internecine strife which has begun to delay production.

A&NMB vs. WPB

• Army & Navy Munitions Board vs. War Production Board smolders after its recent flareup, with the betting on A&NMB—or, at least, on the Army. Basic trouble is that neither WPB nor A&NMB have been able to develop a program which suited the other. Both have broad powers which neither has fully exercised. Under the National Defense Act of 1920 the A&NMB could have set up raw materials controls, but it didn't. Now that materials shortages are closing down armament plants, WPB is on the hot spot. And while the A&NMB is laying low until serious shortages blow the lid off the armament program, WPB spokesmen are hoping that the Production Requirements Plan (PRP and its form PD 25-A) and the "baby Purp," LUMP, will solve the materials supply problem. This "white hope" is a vain one, because nothing but production engineering planning can possibly solve the No. 1 production problem of the United Nations—real materials shortages and inadequate scheduling of materials. The end-point is shutting down arms plants for lack of material.

Invention Control

• WPB's Donald M. Nelson and WPB's energetic and politically deft Maurey Maverick are at odds over the proposed new agency to develop war-winning ideas. The Office of Technical Development—with its tentative approval for \$100 million, is without fatherhood. Nelson's choice is Col. Royal B. Lord, Army engineer, who helped put the Board of Economic Warfare together. Maverick has spotted Cletus A. Miller, one of his associates in the Bureau of Governmental Requirements, WPB, for the job. Observers wonder about the overlap of the two-year-old National Inventors Council, Office of Scientific Research & Development, and numerous Army and Navy groups charged with this type of work. Whatever happens, there is the conflict of several Federal statutes designed to prevent government money being used to develop ideas or patents of one citizen, barring others. On the other hand, we're at war. Note that most of the armament development has actually been done in the laboratories and shops of industry, anyway.

Price Control

• Ceilings established by the Office of Price Administration are causing headaches among the WPB materials branches. Perhaps nothing has crimped the 1942 and 1943 raw materials expectations as much as has some of the ceilings.

About SAE Members

Formerly vice president and director of sales of the Murray Corp. of America, Detroit, **CHARLES H. WIDMAN** is now doing special research work for the Murray Corp., and special sales and development work for several other companies.

HAROLD HOEKSTRA was recently promoted to the position of assistant chief, Aircraft Engineering Division, Civil Aeronautics Administration. Formerly he was chief, Aircraft Section of the Aircraft Engineering Division. In his present position he is devoting a large portion of his time to coordinating the aircraft engineering activities of the CAA with the U. S. Army Air Forces.

JOHN SULLIVAN was promoted from sales engineer to factory manager at the Houde Engineering Corp., Buffalo, N. Y. Mr. Sullivan has been in the employ of Houde Engineering since 1928.

EVERETT J. HESS, formerly in charge of radial engine testing equipment, the Buda Co., Harvey, Ill., is now with Continental Motors Corp., Detroit, as supervisor of engine testing equipment.

WILLIAM I. GRIESE, plant manager of the Lycoming Division of The Aviation Corp., Williamsport, Pa., has been made plant manager of the company's new Liquid Cooled Engine Division, it was announced recently by **WILLIAM F. WISE**, executive vice president. Mr. Griese became associated with The Aviation Corp. in 1941, and for 17 years before that he was with the Crosley Corp. in Cincinnati, in recent years as plant superintendent. The new division will build the huge new airplane engine announced by



William B. Griese

the U. S. Navy Department a short time ago. This engine, the first liquid-cooled design to be used by the Navy in this war, has a horsepower rating considerably greater than that of any other liquid-cooled aircraft engine now in production. The Liquid Cooled Engine plant is now under construction.

Organizer and first head of Vultee Aircraft, Inc., Vultee Field, Calif., **RICHARD W. MILLAR** has resigned as president and director of the company. At the same time he announced his resignation as director and executive committee member of the Consolidated Aircraft Corp., San Diego, Calif.

W. E. ENGLAND has left his position with the White Motor Co., Cleveland, and is back with the American Bantam Car Co., in Butler, Pa., as factory manager on 100% war work.

M. E. NUTTILA, superintendent of motor vehicles, Cities Service Oil Co., is in Puerto Rico as a member of a special commission appointed by ODT Director Joseph B. Eastman to investigate transportation conditions in that country. The commission will study particularly the effects of the acute



M. E. Nuttilla

rubber and gasoline shortage in Puerto Rico with a view to development of a conservation program for trucks and buses. . . . Mr. Nuttilla is a member of the Maintenance Methods Coordinating Committee of the SAE T&M Activity which is working directly for the Maintenance Section, Highway Transport Division of ODT, on conservation projects and has wide experience in this particular field.

Marmon-Herrington Promotions

A. W. HERRINGTON, SAE President, remaining as chairman of the board of the Marmon-Herrington Co., has named **BERT DINGLEY** president of the company. Formerly vice president, Mr. Dingley has been associated with the organization almost since its founding by Mr. Herrington, and is a past chairman of the SAE Indiana Section. **ROBERT C. WALLACE**, until now director of engineering, has been made vice president in charge of engineering. Mr. Wallace is treasurer of the SAE Indiana Section. **JOHN J. KLEIN**, continuing as assistant to the president, becomes also secretary of the company.



Ira J. Snader

IRA J. SNADER, formerly division manager of the Republic Aircraft Products Division of The Aviation Corp., has been made vice president of manufacturing of the corporation. Mr. Snader has been with The Aviation Corp. since 1940, and before that he was in charge of standard machine tool design and production at the Ex-Cell-O Corp., Detroit. He was one of the founders and the first treasurer of Ex-Cell-O.

NORMAN O. PAQUETTE has left his position of technical assistant to the director of production, Department of Munitions & Supply, Automotive Branch, Ottawa, Ont., and is at present connected with the Toronto office of Stevenson & Kellogg, Ltd., as senior engineer.

FRANK J. HODER, JR., is chief engineer at the Marine Products Co., Detroit. He had been connected with the U. S. Navy, Bureau of Ships, Washington.

Formerly an experimental tester for the Hercules Motors Corp., Canton, Ohio, **ARTHUR G. HILF** recently accepted a position in the experimental laboratory of the Twin Coach Co. of Kent, Ohio.

C. H. VAN HARTESVELDT, who had been assistant supervisor of the automotive laboratory, Atlantic Refining Co., Philadelphia, recently became fuels and lubricants engineer for Ranger Aircraft Engines, Division of Fairchild Engine and Airplane Co., Farmingdale, L. I., N. Y.

RAY D. McMULLIN is now connected with the Ruckstell-Burkhardt Engineering Co. of Elmira, as assistant chief engineer. His former connection was with the Pontiac Motor Division of General Motors, Pontiac, Mich., as a mechanical engineer on a special assignment.

DAVID A. SHEPARD is an attache of the Department of State, American Embassy, London. He had been technical adviser to the Foreign Sales Department of the Standard Oil Co. of N. J., New York City.

HARLOW H. CURTICE, Buick general manager, has announced that his organization has cooperated with a special Ordnance

Industry Committee under the direction of Major-Gen. Levin H. Campbell, Jr., Chief of Army Ordnance, in perfecting a method for mass production manufacture of steel shell cases in the larger calibres. Buick has launched a large production program on these new steel shell cases, Mr. Curtice said.

Formerly service manager of the Fitz John Coach Co., Muskegon, Mich., **RUSSELL LUNDBERG** is chief automotive adviser in the Quartermaster Corps, 8th Corps Area, Fort Sam Houston, Tex.

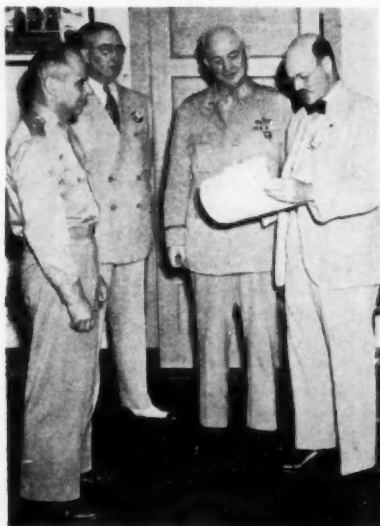
DAVID S. WEBBER has joined the 7th General Hospital Unit of the Boston City Hospital, Boston, Mass., as automotive mechanic. He was previously with Carroll's Jenny Service, Chestnut Hill, Mass., where he was a mechanic and tune-up operator.

GEORGE H. KENDALL, for the past six years senior commercial service engineer for the Norma-Hoffmann Bearings Corp., Stamford, Conn., resigned last May to devote full time to his professional consulting engineering practice on war problems of manufacturing investigations, fabrication processes, and special machinery development and invention. He was formerly chief engineer for the Bearium Metals Corp., Rochester, N. Y., from 1926 to 1932.

HERBERT D. ALLEE, who had been resident engineer, SKF Industries, Inc., Detroit, has been transferred to the Philadelphia office of the same company.

The Daniel Guggenheim Medal for notable achievement in the advance of aeronautics was made recently to **BRIG-GEN. JAMES H. DOOLITTLE**, leader of the American raid on Tokio and other Japanese cities, by **DR. J. C. HUNSAKER**, chairman of the National Advisory Committee for Aeronautics. In making the presentation Dr. Hunsaker said, "This medal is not presented for any single exploit, but for a career distinguished by many contributions to the aeronautical sciences."

Guggenheim Medal to Doolittle



Official photograph, U. S. Army Air Forces

Brig-Gen. James H. Doolittle; Guggenheim Board Member Glenn L. Martin; Lt-Gen. Henry H. Arnold, Army Air Forces Commander; and Dr. J. C. Hunsaker, NACA chairman

Helped Save 15 U. S. Flyers in Greenland Epic



Acme

Col. Bernt Balchen, famed aerial explorer of frozen wastes, standing in front of his bomber with which he rescued 13 members of a stranded Flying Bomber crew. He and Lt. A. Y. Parunak, U. S. Navy, repeated the feat two weeks later in daring rescue of Col. R. W. C. Winsatt, who was injured, and an unidentified sergeant. An SAE member for the past 14 years, Col. Balchen resigned as operations manager, Fred Olsen Line, New York, more than a year ago to join the Army Air Forces. The rescue involved landing on a thin sheet of water covering a frozen lake, required Alpine climbing techniques, and followed several reconnaissance flights for mapping the uncharted areas.

T. B. RENDEL is back in the United States. He has returned to Washington as principal technical officer in charge of the



T. B. Rendel

Fuel and Lubricating Oil Section of the British Air Commission at 1785 Massachusetts Ave., following nearly two years in London, first as chief engineer of Asiatic Petroleum's aviation department, and more recently as a member of the BAC staff in England. A former SAE vice president, Mr. Rendel is also chairman of the Horning Memorial Board of Award. In the BAC at Washington Mr. Rendel takes over the post previously held by **ERNEST LEON BASS**, who has returned to England to take up other war duties.

Formerly an industrial engineer, **A. FRED ANDERSON** was recently appointed factory manager of the West Coast Plant of Thompson Products, Inc., Bell, Calif.

A. ORAM FULTON, president and treasurer of Wheelock, Lovejoy & Co., Inc., and president of the County Bank & Trust Co., both of Cambridge, has been appointed chief of the alloy steel unit of the Iron and Steel Branch of WPB in Washington. His job is to see that the supply of specially processed

steel used in gun barrels, armor plate, aircraft engines and machine tools gets to the war plants needing it.

J. N. JOHNSON, formerly vice president in charge of operations of the Horton Motor Lines, Inc., and president of the Brown Equipment & Mfg. Co., both of Charlotte, N. C., is now connected with Associated Transport, Inc., New York City, as assistant to the president.

WILLIAM L. BATT is now general assistant and deputy to WPB Chairman Donald M. Nelson.

B. F. SHEPHERD, manager of the Rock Drill Division, Ingersoll-Rand Co., Phillipsburg, N. J., has been named to receive the 1942 Sauvour Medal of the American Society for Metals.

Formerly sales manager for the Universal Products Co., Inc., Dearborn, Mich., **H. B. ORR** has been elected vice president in charge of sales of the same company. He will be headquartered at their plant in Dearborn, and **G. E. DUNN**, heretofore in charge of special machine and tool designs, has been made chief engineer in charge of all designs and applications of Universal Joints for the same company.

ALLEN WESCOTT was recently transferred from General Motors India, Ltd., Bombay, India, where he was manager of parts and service, to General Motors Overseas Operations, New York City.

JACK JEROME has joined Vultee Aircraft, Inc., Vultee Field, Calif., as hydraulics engineer. He had been design engineer at Electrol, Inc., Kingston, N. Y.

FRED S. KRAMER has accepted a position as flight test engineer with Consolidated Aircraft Corp., San Diego, Calif., in their engineering department. Before joining Consolidated, Mr. Kramer was an instructor at the Spartan School of Aeronautics, Tulsa, Okla.

In Military Services

A past vice president of the Society in charge of the Production Engineering Activity, **KARL L. HERRMANN** has been commissioned a lieutenant commander in the U. S. Naval Reserves. He is a consultant, Production Engineering Section, Bureau of Aeronautics. For many years Com. Herrmann was a production executive in the



Karl L. Herrmann

automotive industry, and was vice president of Bantam Ball Bearing Co., South Bend, before entering the field of consulting engineer several years ago.

LEE M. CORLESS has been promoted from captain to major in the Quartermaster Corps, and is stationed at Fort Francis E. Warren, Wyo.

FRANK E. BLACK, U. S. Army, 71st Coast Artillery, was recently promoted from lieutenant to captain.

CAPT. DONALD L. BOWER, U. S. Army Air Forces, is a student at the Air Intelligence School, Harrisburg, Pa.

REX TAYLOR is at Camp San Luis Obispo, Calif., in the 7th Motorized Division, Motor Officer Headquarters. Before joining the service Mr. Taylor was superintendent of maintenance, Yellow Cab Co. of Calif., Los Angeles.

Formerly district manager, Toledo Steel Products Co., Toledo, Ohio, **GARDNER SMITH** is now a captain in the U. S. Army Air Forces, 46th Air Base Squadron, Hamilton Field, Calif.

CAPT. LAWRENCE J. GRUNDER is at the Atlanta Quartermaster Motor Base, Motor Transport Division, Atlanta, Ga.

LT. HARVIE H. STRAWN is staff officer at the Army Air Forces Glider Training School, English Field, Amarillo, Tex. He had been at Randolph Field, Tex.

LT. T. R. MYERS, formerly service manager, E. A. Thomson Motor Sales, Suffern, N. Y., is at the Holabird Motor Base, QMC, Baltimore, Md. He is assistant test officer.

LT. FORREST A. STINSON is in the 37th Signal Training Battalion, Company C, Camp Crowder, Mo. Before going into active duty he was sales engineer, Delco-Remy Division of General Motors Corp., Detroit.

COL. JOSEPH A. CELLA has been promoted from the rank of major. He is stationed at Fort George Wright, Washington.

"If we open the morning mail and don't find in it a contribution from **LT.-COL. WALTER C. THEE**," writes the editor of *Army Motors*, the Holabird-published QMC service monthly, "we look at each other in puzzlement and faint alarm. For Col. Thee has been such a prolific contributor, we are beginning to consider him a member of the staff. As a matter of fact . . . in the June issue we are dedicating a department to him . . . containing only a few of his recent contributions." Col. Thee is Commanding Officer, 53rd QMC Regiment, Fort Bragg, N. C. (Editor's note—any motor truck man who can get on the mailing list for *Army Motors* has a monthly reading treat in store. It is as interesting as it is useful . . . and vice versa, as it were.)

Joins Air Forces



Major Ralph S. White

Formerly senior aeronautical engineer in charge of power plants, aircraft engineering division, Civil Aeronautics Administration, **RALPH S. WHITE** has been commissioned a major in the Army Air Forces, AUS. He will continue in his profession as an engineer, and will also serve as liaison between the United States and British governments.

ALLEN TAYLOR has been appointed captain, Quartermaster Corps, Motor Transport Division, Third Corps Area, Motor Repair Shop, Beltsville, Md. In civilian life Capt. Taylor was with the Shell Oil Co., Inc., Sewaren, N. J.

LT. JOHN A. VERMEULEN is in the Office of the Chief of Staff, Munitions Bldg., Washington, D. C.

LT. GERALD R. ALMY has been transferred from his previous station, U. S. Army, Second Battalion, 47th QM Regiment, Fort Sill, Okla., to 142nd QM Company, Texas City, Tex.

Formerly service manager, Cadillac Motor Car Division, General Motors Corp., Yonkers, N. Y., **LT. GEORGE W. HAZEN** is in the U. S. Army Ordnance Department, and is now stationed at Cleveland, Ohio.

2ND LT. ROY C. CRONE is in the Office of Chief of Ordnance, Tank and Combat Vehicle Division, Washington. He had been

automotive engineer, The Texas Co., Chicago.

B. ROZETT has been granted a leave of absence from United Standard Products, Inc., Chicago, and is on active duty in the U. S. Army. He was appointed to the rank of



B. Rozett
Automotive
Officer

captain and is assigned to duty as automotive officer, Headquarters Sixth Corps Area, Chicago.

LT. SAMUEL UNTERMYER (jg) is at the Naval Air Station, Corpus Christi, Tex. Previously he was assistant diesel engineer, in the U. S. Navy Department, Bureau of Ships, Washington.

2ND LT. WALTER H. ZIEGLER is shop officer in the U. S. Army, Ordnance Department, 91st Ordnance Company, Camp Bowie, Tex.

Formerly tank maintenance officer, U. S. Army, Ordnance Department, Rock Island Arsenal, Rock Island, Ill., **2ND LT. ROYCE CHILDS** is now in the 2nd Armored Division, Maintenance Battalion, Fort Benning, Ga.

JOSEPH A. CIPOLLA, ensign, U. S. Naval Reserve, is at present in the Naval Torpedo School in Newport, R. I.

Formerly in the engine testing department of the Electro-Motive Corp., La Grange, Ill., **WOODROW M. LUCAS** is now an aviation cadet in the U. S. Army Air Forces, at Chanute Field, Ill.



Lt. James W. Billings, Jr.
Base Ordnance
Officer at
Gowen Field,
Idaho

WILLIAM E. CARTER has left his position as assistant service manager, Patterson Motor Sales, Ottawa, Ont., and is now on the staff of the Inspection Board of the United Kingdom and Canada, stationed at Hamilton Headquarters, Hamilton, Ont.

Production Data Editor



William F. Sherman

Field editor of the SAE Journal, **WILLIAM F. SHERMAN** has been appointed editor of *Production Information*, a new production engineering publication of the Automotive Council for War Production, **GEORGE ROMNEY**, managing director of ACWP, announced. Mr. Sherman has been Detroit technical correspondent for the *Iron Age* for the past five years. He is a graduate of the engineering school, University of Detroit, and was a member of the central office technical data staff of General Motors Corp. The Council was formed early last year by the automotive industry to expedite its output of armament for the fighting forces. Its chairman is **ALVAN MACAULEY**, president, Automobile Manufacturers Association.

Formerly a research engineer at Thompson Products, Inc., Cleveland, **R. B. AUFMUTH** is now with the S. K. Wellman Co., of the same city, manufacturers of a friction material for use in clutches and brakes for automotive and aircraft use.

WALTER T. F. HASSAN has returned to his previous firm, S. S. Cars, Ltd., Coventry, England. He left the Bristol Aeroplane Co., Bristol, England, where he was technical assistant.

DALE L. BURROWS, Iowa State College graduate, and **HARRY S. IMMING, JR.**, University of Michigan graduate, are junior engineers at the National Advisory Committee for Aeronautics, Langley Field, Va.

HENRY T. NAGAMATSU is a research aerodynamicist in Airport Plant No. 2 of Curtiss-Wright, at Buffalo. He is a graduate student of Aeronautics, from the California Institute of Technology, Pasadena.

Recent University of California graduates include SAE Student Members **FRANKLIN Y. OKUDA**; **JOHN BRAXTON HANSELL, JR.**, who is now in U. S. Naval Reserve, Aeronautical Training School of the California Institute of Technology, Pasadena; **WILLIAM E. KRUPP**, 2nd lieutenant in the U. S. Army; **JOHN MORRIS PARKER**, student engineer doing construction work in Balboa, Canal Zone; **HENRY FREDRICK BROCKSCHMIDT**, staff member at the Radiation Laboratory, Massachusetts Institute of Technology, Cambridge; **WALTER R. WYKOFF**, student engineer at Pratt & Whitney Aircraft, East Hartford, Conn.; **JOHN ALBERT ARNETT**, field service trainee, Wright Aeronautical Corp., Paterson, N. J.

RAYMOND E. DUNN is resident engineer of Chevrolet-Motor & Axle, Division of General Motors Corp., Buffalo, manufacturers of Pratt & Whitney aircraft engines. He was formerly design supervisor of the Chevrolet Central office, Detroit.

CHARLES W. PHELPS has resigned from the staff of Purdue University, West Lafayette, Ind., where he was an instructor in mechanical engineering, and has joined Andover in Connecticut.

CARL H. FRINK, proprietor, Carl H. Frink, Inc., Clayton, N. Y., has been appointed a member of the Snow Plow Industry Advisory Committee, WPB announced.

CURTIS R. ARMBRUST has joined the aviation division of the Easy Washing Machine Corp., Syracuse, N. Y., as production engineer. Previously Mr. Armbrust had been development engineer, Willys-Overland Motors, Inc., Toledo, Ohio.

DONALD W. SMITH resigned his position as sales engineer in the Detroit office of the Sealed Power Corp., and is now super-



Donald W. Smith
Test
Supervisor

visor of production tests at the Ruckstell-Burkhardt Engineering Co., Elmira, N. Y.

KENNETH KASSCHAU, SAE Metropolitan Section student chairman, talked on

aircraft engine development before students of the Newark College of Engineering on Aug. 6. Mr. Kasschau, who is assistant project engineer, Wright Aeronautical Corp., illustrated his discussion with two motion pictures.

WILLIAM R. BECKMAN, who had been production engineer at the Birdsell Corp., South Bend, Ind., is now connected with the Quality Hardware & Machine Corp., Chicago, as research engineer.

THOMAS C. LEAKE is no longer an engineer for the British Purchasing Commission, New York City. Mr. Leake has joined the engineering department of Eclipse Aviation, Division of Bendix Aviation Corp., Bendix, N. J.

Formerly professor of aeronautical engineering at Purdue University, West Lafayette, Ind., **KARL D. WOOD** has joined General Motors Corp., at Detroit.

According to a recent United Aircraft announcement, **HENRY J. FISCHBECK** was transferred from the inspection department to the manufacturing department at Pratt & Whitney Aircraft Division, United Aircraft Corp., East Hartford, Conn.

LOWELL S. HARDING has joined Colonial Airlines, Inc., La Guardia Field, N. Y., as vice president in charge of operations. His former connection was with the Civil Aeronautics Administration, also at La Guardia Field, where he was chief of the Air Carrier Branch, 1st Region.

Formerly a mechanic for Carburetor Sales & Service, Boston, **HENRY R. JORDAN** is now at the U. S. Naval Air Station, Dennison Barracks, Squantum, Mass.

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SAE members who received Master of Automotive Engineering degrees from the Chrysler Institute of Engineering. Standing (left to right) are Morgan W. Dawley, Vaino J. Vehko, George P. Semple, Jack R. Doidge, Yu-Kong Mao, Philip Rothwell, Norris E. March, Herschel A. Williams, and L. Clifford Sackett. Seated (left to right) are A. C. Staley, dean of the Graduate School; O. R. Skelton, vice president and a member of the Board of Trustees of the Institute; and H. T. Woolson, president of the Chrysler Institute of Engineering. R. W. Halberg, R. H. Loughran, and R. H. Smith were absent at the time the photograph was taken.

SAE Section Officers

1942

1943

■ Baltimore

Chairman: **Otto K. LeBron**, lease department, Sterrett Operating Service, Inc.; vice chairman: **John F. Rowley, Jr.**, president, Hicks Express, Inc.; vice chairman, Aeronautics: **Herman Hollerith, Jr.**, assistant group engineer, Glenn L. Martin Co.; vice chairman, Transportation & Maintenance Activity: **Lt.-Col. G. A. Greaves**, assistant commandant, Motor Transport School, U. S. Army, Holabird Motor Base, Baltimore; treasurer: **David R. Steele**, owner, Falls-way Spring Service.

■ Buffalo

Chairman: **Peter F. Rossmann**, assistant to director of military engineering Curtiss-Wright Corp., Airplane Division; vice chairman: **Harry Hall**, development and research engineer, Worthington Pump & Machinery Corp.; secretary-treasurer: **F. L. Koethen**, technical director, American Lubricants, Inc.

■ Canadian

Chairman: **John H. Hickey**, general parts and service manager, Chrysler Corp. of Canada, Ltd.; vice chairman: **W. A. Wecker**, president, general manager, McKinnon Industries, Ltd.; vice chairman, Hamilton district: **Walter Gayfer**, purchasing agent, International Harvester Co. of Canada, Ltd.; vice chairman, Kitchener district: **Frank Harold Stafford**, sales department, B. F. Goodrich Rubber Co. of Canada, Ltd.; vice chairman, Montreal district: **Herbert Roger Holder**, superintendent, automotive bus department, Montreal Tramways Co.; vice chairman, Oshawa district: **Edwin F. Armstrong**, engineering department, General Motors of Canada; vice chairman, Quebec district: **Col. F. W. Miller**, vice president, general manager, Collins & Aikman of Canada, Ltd.; vice chairman, St. Catharines district: **James Calvin Wilson**, director, vice president, charges sales, Thompson Products, Ltd.; vice chairman, Sarnia district: **Alfred Frank Oliver**, sales and service manager, Electric Auto-Lite, Ltd.; vice chairman, Windsor district: **Morley Sanford Easton**, experimental engineer, Chrysler Corp. of Canada; treasurer: **F. Martin Buckingham**, vice president, general manager, Wallace Barnes Co., Ltd.; secretary: **Warren B. Hastings**, editor, manager, Canadian Motorist.

■ Chicago

Chairman: **J. Howard Pile**, editorial director, Chek-Chart Corp.; vice chairman: **Edward R. Barnard**, assistant director of research, Standard Oil Co. (Indiana); vice chairman, Aeronautics: **Ralph D. Edwards**, station manager, United Air Lines; vice chairman, Fuels & Lubricants Activity: **William H. Oldacre**, president, general manager, director of research, D. A. Stuart Oil Co., Ltd.; vice chairman, Passenger Car Activity: **Emil O. Wirth**, chief engineer, Automotive Carburetor Division, Bendix Products Division, Bendix Aviation Corp.; vice

chairman, Parts & Accessories: **Paul H. Oberreutter**, president, dynamometer engineer, Mid-West Dynamometer & Engineering Co.; vice chairman, Tractor & Industrial and Diesel Engine Activities: **H. G. Smith**, executive engineer, Buda Co.; vice chairman, Transportation & Maintenance Activity: **Glenn W. Johnson**, transportation manager, Bowman Dairy Co.; vice chairman, Peoria district: **Carl G. A. Rosen**, director of research, Caterpillar Tractor Co.; treasurer: **James T. Greenlee**, sales manager, Automotive Industrial Division, Imperial Brass Mfg. Co.; secretary: **John A. Herlihy**, executive vice president, operations, United Air Lines Transport Corp.

■ Cleveland

Chairman: **Charles H. Miller**, export service manager, White Motor Co.; vice chairman: **Harry F. Gray**, president, chief engineer, International Piston Ring Co.; vice chairman, Akron-Canton district: **Winfield S. Brink**, development engineer, Firestone Steel Products Co.; treasurer: **Harry H. Hooker**, assistant chief engineer, Eaton Mfg. Co.; secretary: **Richard S. Huxtable**, administration department, Cleveland Diesel Engine Division, General Motors Corp.

■ Dayton

Chairman: **Ernest John Stockum**, sales and estimating, G.H.R. Foundry Co.; vice chairman: **John F. Haines**, assistant chief engineer, Aeroproducts Division, General Motors Corp.; treasurer: **E. S. Patch**, sales manager, Moraine Products Division, General Motors Corp.; secretary: **Charles Robert Talmage**, sales manager, Moraine Products Division, General Motors Corp.

■ Detroit

Chairman: **Edgerly W. Austin**, general manager, sales, Timken Roller Bearing Co.; vice chairman: **James C. Zeder**, chief engineer, Chrysler Corp.; vice chairman, Aeronautics: **Don R. Berlin**, aeronautical engineer, General Motors Corp.; vice chairman, Passenger Car Activity: **Max M. Roensch**, experimental engineer, Chrysler Corp.; vice chairman, Passenger Car Body Activity: **Ronald J. Waterbury**, body engineer, Chevrolet-Central Office; vice chairman, Production Activity: **Carroll Russell Alden**, research engineer, Ex-Cell-O Corp.; vice chairman, Junior-Student Activity: **Richard B. Sneed**, research engineer, Ethyl Gasoline Corp.; treasurer: **F. W. Marschner**, Western sales manager, New Departure Division, General Motors Corp.; secretary: **Earl H. Smith**, executive engineer, Aircraft Engine Division, Packard Motor Car Co.

■ Indiana

Chairman: **Prof. Joseph Liston**, associate professor, aeronautical engineering, Purdue University; vice chairman: **Ronald McKean Hazen**, chief engineer, Allison Division, General Motors Corp.; vice chair-

man: **Roy W. Paton**, experimental engineer, Perfect Circle Co.; treasurer: **R. C. Wallace**, director of engineering, Marmon-Herrington Co., Inc.; secretary: **Harlow Hyde**, Indianapolis.

■ Kansas City

Chairman: **R. G. Horridge**, building superintendent, Southwestern Bell Telephone Co.; vice chairman: **D. S. Flynn**, assistant division manager, Ethyl Gasoline Corp.; treasurer: **Howard F. Dougherty**, assistant shop foreman, Kansas City Power & Light Co.; secretary: **Carl M. Berry**, field engineer, Ethyl Gasoline Corp.

■ Metropolitan

Chairman: **Herbert H. Happersberg**, assistant to the president, Brockway Motor Co., Inc.; vice chairman: **Clifford M. Larson**, chief consulting engineer, Sinclair Refining Co.; vice chairman, Aeronautics: **Kenneth Campbell**, project engineer, Wright Aeronautical Corp.; vice chairman Diesel-Engine Activity: **A. A. Lyman**, automotive engineer, Public Service Coordinated Transport; vice chairman, Fuels & Lubricants Activity: **Neil MacCoull**, research engineer, The Texas Co.; vice chairman, Passenger Car & Body Activities: **John J. Wrenn**, special representative, National Accounts Division, Studebaker Sales Corp. of America; vice chairman, Transportation & Maintenance Activity: **L. G. Kurtz**, director of motor equipment and maintenance, City of New York, Department of Sanitation; vice chairman, Student Activity: **Kenneth Kasschau**, assistant project engineer, Wright Aeronautical Corp.; treasurer: **Robert H. Clark**, general superintendent transportation, Consolidated Edison Co. of N. Y., Inc.; secretary: **R. M. Cregar**, transportation engineer, Public Service Electric & Gas Co.

■ Milwaukee

Chairman: **N. F. Adamson**, chief engineer, Twin-Disc Clutch Co.; vice chairman: **George M. Lange**, assistant division manager, Timken Roller Bearing Co.; treasurer: **Lloyd L. Bower**, installation engineer, Waukesha Motor Co.; secretary: **Robert I. Dick**, assistant chief engineer, Murphy Diesel Co.

■ New England

Chairman: **John A. Hassey**, superintendent, operations, Cities Service Oil Co.; vice chairman: **Robert Gardner**, manager, automotive department, Lever Bros. Co.; treasurer: **Albert Lodge**, proprietor, Goodrich Oil Sales Co.; secretary: **Blythe R. Jones**, assistant division manager, Ethyl Gasoline Corp.

■ Northern California

Chairman: **Frederick W. Twining**, general manager, Twining Laboratories; vice chairman: **Harold L. Morris**, chief engineer, Hall-Scott Motor Car Co.; vice chairman, Aeronautics: **Frank W. Kavanagh**, research engineer, Standard Oil Co. of Calif.; vice chairman, Diesel-Engine Activity: **John Seagren**, chief engineer, Atlas Imperial Diesel Engine Co.; vice chairman, Fuels & Lubricants Activity: **Dr. Alfred G. Cattaneo**, research engineer, Shell Development Co.; vice chairman, Transportation & Maintenance Activity: **Sherer G. Culver**, vice president, engineering department, East Bay Transit Co., and vice president, engineering department, Key System; treas-

urer: **William V. Hanley**, research engineer, Standard Oil Co. of Calif.; secretary: **Trescott S. White**, engineer, heavy duty diesel engine design, Enterprise Engine & Foundry Co.

■ Northwest

Chairman: **Lt. Kenneth Ayers**, director of maintenance, 13th Naval District, U. S. Navy; vice chairman: **Wilson E. Davenport**, division sales manager, Union Oil Co. of Calif.; treasurer: **Leslie R. Dafoc**, truck and bus designer, Kenworth Motor Truck Corp.; secretary: **Lee Ketchum**, sales engineer, Six Robblees, Inc.

■ Oregon

Chairman: **J. R. Kessler**, manager, Oregon Parts Co.; vice chairman: **Zenon C. R. Hansen**, retail sales manager, International Harvester Co.; treasurer: **James Patrick Tretton, Jr.**, superintendent of equipment, Portland Traction Co.; secretary: **J. P. Bourne**, superintendent, industrial lubrication sales, Standard Oil Co. of Calif.

■ Philadelphia

Chairman: **Cecil M. Billings**, Philadelphia, Pa., division representative, automotive oil sales, Gulf Oil Corp.; vice chairman: **G. Ralph Strohl**, special equipment engineer, Autocar Co.; treasurer: **Theodore Brinton Hetzel**, assistant professor Haverford College; secretary: **Franklin C. Burk**, supervisor, automotive laboratory, Atlantic Refining Co.

■ Pittsburgh

Chairman: **C. J. Livingstone**, automotive engineer, Gulf Research & Development Co.; vice chairman: **Allen J. Imblum**, vice president, Pittsburgh Auto Spring Co.; vice chairman, Oil City district: **D. G. Proudfoot**, sales engineering department, Pennzoil Co.; treasurer: **Norman H. Werner**, estimator, Ed. Werner Transfer & Storage Co.; secretary: **S. G. Page**, general superintendent, Equitable Auto Co.

■ St. Louis

Chairman: **James Earl Garner**, superintendent, transportation equipment, Union Electric Co. of Mo.; and superintendent, transportation equipment, St. Louis County Gas Co.; vice chairman: **Frederick H. Roe-ver**, superintendent, Aeronautical Engineering & Executive Schools, Parks Air College; treasurer: **L. D. Hines**, automotive engineer, Sinclair Refining Co.; secretary: **Robert O. Slattery**, sales engineer, Shell Oil Co., Inc.

■ Southern California

Foster M. Gruber, design engineer, Douglas Aircraft Co., Inc.; vice chairman: **Wallace Linville**, chief automotive engineer, General Petroleum Corp. of Calif.; vice chairman, Aircraft Activity: **George Tharratt**, chief engineer, Adel Precision Products Corp.; vice chairman, Aircraft-Engine Activity: **C. P. Sander**, chief engineer, Kinner Motors, Inc.; vice chairman, Fuels & Lubricants Activity: **Claude Edward Emmons**, technologist, The Texas Co.; vice chairman, Passenger-Car Activity: **Carl Abell**, field engineer, Ethyl Gasoline Corp.; vice chairman, Transportation & Maintenance Activity: **Cecil E. Ellis**, supervisor, transportation department, Southern

California Edison Co., Ltd.; vice chairman, San Diego district: **Eddie Molloy**, vice president, works manager, Ryan Aeronautical Co.; treasurer: **Ellis W. Templin**, automotive engineer, Los Angeles Department of Water & Power; secretary: **J. O'Hara Smith**, salesman, Standard Oil Co. of Calif.

■ Southern New England

Chairman: **L. C. Lichty**, associate professor, mechanical engineering, Yale University; vice chairman: **Charles H. Calkins**, manager, gear department, Bausch Machine Tool Co.; vice chairman, Aeronautics: **Charles W. Deeds**, president, Chandler-Evans Corp.; treasurer: **T. C. Delaval-Crow**, chief engineer, New Departure Division, General Motors Corp.; secretary: **Charles A. Morss**, designer, Pratt & Whitney Aircraft, Division United Aircraft Corp.

■ Syracuse

Chairman: **John P. Flannery**, assistant chief engineer, Aircooled Motors Corp.; vice chairman: **William W. Manville**, research engineer, charge of laboratory, Aircooled Motors Corp.; secretary-treasurer: **Carl T. Doman**, vice president, chief engineer, Aircooled Motors Corp.

■ Washington

Chairman: **Albert F. Campbell**, district sales manager, Timken Roller Bearing Co.; vice chairman: **James A. Allan**, owner, 333 Southern Bldg., Washington; vice chairman, Norfolk district: **H. J. E. Reid**, engineer in charge, National Advisory Committee for Aeronautics; treasurer: **Clarence S. Bruce**, automotive engineer, National Bureau of Standards; secretary: **Capt. H. R. Higgins**, U. S. Army, Office of Quartermaster General, Motor Transport Service.

■ Southwest Group

Chairman: **William F. Lowe**, secretary-treasurer, Natural Gasoline Association of America; vice chairman: **W. H. Emmons**, general plant manager, Braden Winch Co.; secretary-treasurer: **Arch L. Foster**, technologist, special assistant to manager, patent department, Phillips Petroleum Co.

■ SAE Club of Colorado

Chairman: **Marshall Sylvester Anderson**, tractor and power plant salesman, McCarty-Sherman Motor Co.; vice chairman: **J. D. Sullivan**, manager, sales, commercial steel products, Colorado Fuel & Iron Corp.; vice chairman: **Paul E. Waggoner**, general service manager, Safeway Stores, Inc.; secretary-treasurer: **Marian Higgins**, Denver.

■ SAE Muskegon Club

Chairman: **Stuart Nixon**, Sealed Power Corp.; vice chairman: **Paul S. Lane**, research engineer, Muskegon Piston Ring Co.; secretary-treasurer: **Harold Rosen**, owner, American Grease Stick Co.

■ SAE Texas Group

Chairman: **Allen Guiberson**, executive vice president, Guiberson Diesel Engine Co.; vice chairman: **Harold F. Schwedes**, factory manager, North American Aviation, Inc. of Texas; secretary: **W. G. Fuller**, Globe Aircraft Co.

About SAE Members

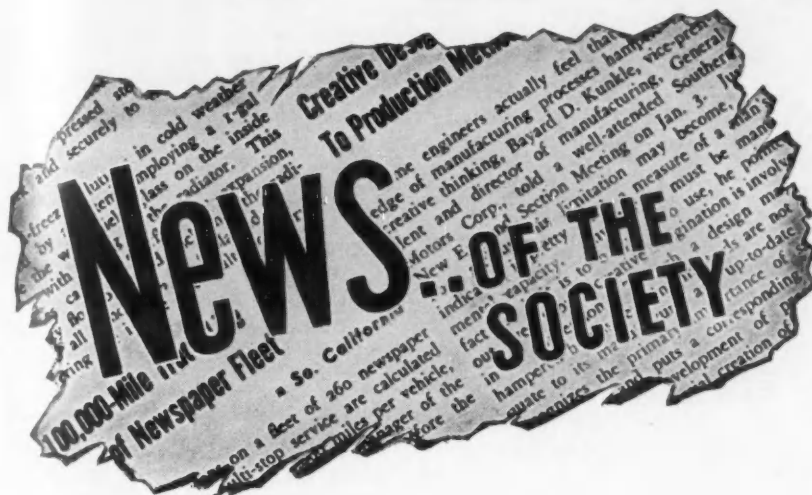
(Concluded from page 32)

The following SAE student-member graduates have joined several branches of the Navy. **WILLIAM J. BUFFINGTON**, University of Michigan, is an aviation cadet in the U. S. Naval Air Corps; **JOHN SLAJER, JR.**, University of Oklahoma, is with the Naval Ordnance Laboratories, Navy Yard, Washington, as junior mechanical engineer; **STEVE JOHN BRIGHAM**, University of Wisconsin, is a junior mechanical engineer in the aeronautical engine laboratory at the Philadelphia Navy Yard; **ROBERT M. SALTER, JR.**, Ohio State University, junior instructor (civil service), Navy Department, Chicago; **HOWARD M. DORWARD**, University of Wisconsin, is an ensign at the Naval Training Station, California Institute of Technology, Pasadena.

Formerly engineering draftsman, **ADOLPHE J. De MATTEO** has become clutch engineer of the Mack Mfg. Corp., Plainfield, N. J.

The following list includes some of the SAE student-member graduates who are engaged in engineering work at some of the major defense plants in the country: **VAL GENE PETERSON**, Oregon State College graduate, is technical engineer at the Seattle-Tacoma Shipbuilding Co., Tacoma; **LENNARD MARTIN ERICKSON**, Polytechnic Institute of Brooklyn, experimental test engineer at Pratt & Whitney Aircraft, East Hartford, Conn.; **MARTIN STARK**, Virginia Polytechnic Institute, student test engineer, Wright Aeronautical Corp., Paterson, N. J.; **WILLIAM J. BLATZ**, University of Detroit, aeronautical engineer, McDonnell Aircraft Corp., Lambert Field, St. Louis, Mo.; **WILLIAM C. MALLOY**, University of Illinois, experimental test engineer, Pratt & Whitney Aircraft, East Hartford, Conn.; **THOMAS L. JACKSON**, University of Illinois, liaison engineer, Curtiss-Wright Corp., Columbus, Ohio; **JOHN P. JOSEPHS**, Yale University, student engineer, General Electric Co., Philadelphia.

Among the graduates of Purdue University, Indiana, were **HERBERT A. WISE, JR.**, junior engineer, Superior Engine Division, National Supply Co., Springfield, Ohio; **ROBERT A. PAETZ**, tool designer, Thompson Aircraft Products Co., Cleveland; **GEORGE W. ELY**, design engineer (Stromberg Carburetors), Bendix Products Division, Bendix Aviation Corp., South Bend, Ind.; **RICHARD C. HURD**, in training to become engineering officer, U. S. Army Air Forces, stationed at Chanute Field, Rantoul, Ill.; **DENNIS HSUEH-HSI LIU**, Houde Engineering Corp., Buffalo; **ROBERT E. SCHMIDT**, pre-junior engineer, Bendix Products Division, Bendix Aviation Corp., South Bend, Ind.; **LEONARD W. KEIL**, junior engineer, aircraft division, Holley Carburetor Co., Detroit; **2ND LT. ROBERT P. BURROW, JR.**, U. S. Army Air Forces, Experimental Engineering Section, Armament Laboratory, Wright Field, Dayton; **JOSEPH N. YOUNG**, mechanical engineer, Allis-Chalmers Mfg. Co., Milwaukee.



Rubber Spec Data Available

Limited supplies of reprints of Standard SAE-ASTM Specifications—one on natural, and another on synthetic rubbers—are now available at SAE headquarters.

The work on standardization of synthetic rubber specifications was done by Subcommittee V of the SAE-ASTM Technical Committee A on Automotive Rubber; the work on natural rubbers was prepared by Subcommittee IV.

These data will be available in regular Handbook form later on.

SAE Materials Experts Meet in Denver

DETAILED review was made of 114 Aeronautical Materials Specifications (AMS) by the SAE Aircraft Materials & Processes Coordinating Subdivision Aug. 10 to 14 at Denver. This was the fifth of a series of meetings held in different part of the country for the convenience of its members.

Action reported by Chairman J. B. Johnson, U. S. Army Air Forces, Wright Field, Ohio, include:

41 specifications approved for release to the SAE Aeronautics Division;

47 approved for forwarding to the SAE AM&PC Subdivision;

16 recommended for change, and 9 approved with no changes.

Among the 42 approved subject to the Division's approval were 16 AMS compositions for the proposed Alternate Steels (NE) Specifications of the War Production Board. Although complete tests have not been completed, reports to date were so encouraging that they were recommended for approval and publication. This unusual speed was in the interest of war production and saving

as much critical material as possible.

In general, the work of the committee included:

- Aluminum alloy specifications—one was completely approved, five were approved for submittal to the SAE AM&PC Subdivision, and 14 were approved with certain revisions;

- Magnesium alloy specifications—one approved, and four approved for submittal to the SAE AM&PC Subdivision;

- Copper, brass, and bronze—five approved in final form, two approved subject to adoption by the Aeronautics Division, and ten approved for submittal to the SAE AM&PC Subdivision;

- Steel alloy specifications—one completely approved, seven approved for submittal to the SAE Aeronautics Division, and nine voted to be submitted to the SAE AM&PC Subdivision;

- Cadmium plating—one approved in final form, and five approved for submission to the SAE AM&PC Subdivision. These included three covering zinc chromate flushing,

and two on compounds for zinc chromate sealing.

- Hair felt—one approved in final form.

SAE Club Is Host

The SAE Club of Colorado organized a dinner meeting for the committee on Aug. 11, and extended other hospitality. Among the hosts were Chairman V. H. Tout of the SAE Club, E. J. Graham, Joseph P. Ruth, J. Munroe, George N. Gromer, C. Mullin, A. Dahm, Fred Ross Eberhardt, E. Krueter, D. Boyd, Paul E. Waggoner, G. Pille, L. Prestrud, J. D. Sullivan, O. McDonald, H. Ryder, L. Elder, M. Merrill, and F. Kees. Miss Marian Higgins handled the many details involved in these arrangements.

Members of the SAE Aircraft Materials & Processes Coordinating Subdivision, which reports to the Aeronautics Division under Chairman Arthur Nutt, in attendance at the Denver meeting were:

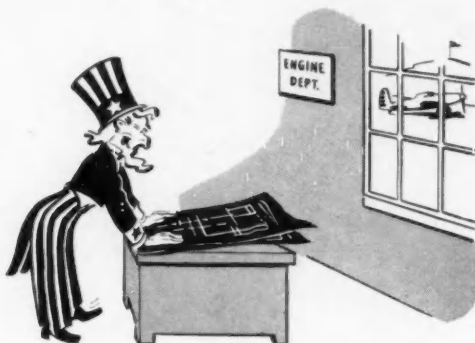
Chairman Johnson, L. D. Bonham, B. Clements, Dr. N. E. Waldman, C. E. Carrigan, Eric Dudley, P. V. Faragher, W. H. Graves, A. W. F. Green, R. L. Heath, F. S. Klock, W. B. Leyda, H. J. Noble, H. G. Runde, L. P. Spalding, and R. D. Zonge.

SAE Semi-Annual Meeting

THE SAE War Transportation & Maintenance Meeting in New York, Oct. 7 and 8, has been designated as the 1942 Semi-Annual Meeting of the Society. A business session of the Society will be held immediately preceding the dinner program on the evening of Oct. 7.

The Council has taken this action to fulfill the requirements of the SAE constitution that "the Society shall hold two meetings in each year. The Annual and a Semi-Annual Meeting . . . at such time and place as the Council may appoint." The Summer Meeting, usually designated as the Semi-Annual Meeting, was cancelled for 1942, making the designation of an alternate meeting necessary.

A NEW TECHNIQUE in Aircraft-Engine BUILDING



by W. R. Hodge

■ Northern California

PRICIMALLY the Taylor engine was designed to produce an engine better suited to mass production by replacing castings with stampings, standard tubing, and simple machinings from bar stock. Other than this, the engine is entirely conventional, being built along lines that have proved successful in the past. While the fabricated powerplant is not a new idea, it has not heretofore, been brought to a satisfactory conclusion. The Taylor-type engine can be applied to practically every field wherein there is a demand for internal-combustion engines.

Advantages that accrue from this method:

- 1.—The finished product can be made of a combination of alloys, placing the high strength materials where the stresses are the highest.
- 2.—Due to standard materials used, and the close tolerances to which the finished product may be held before the final machining operations, the product is of very close uniformity and strength. For the same reason, the finish machining may be reduced to a minimum.
- 3.—There can be considerable weight saving at no cost of strength and rigidity of structure.
- 4.—Many parts which are thus built up may be made of a combination of stampings, screw machine, or turret-lathe parts. These machines are well suited to mass production, and therefore, many parts may be made in a comparatively short time, at small cost per unit.
- 5.—In this type of manufacture, once the proper methods of stamping, machining, and assembly are worked out, the percentage of rejected parts will be very small.

The method used to join the various pieces of each sub-assembly in the Taylor engine is "oven brazing," or welding in a controlled atmosphere.

Copper is ordinarily used as the brazing material, but other alloys with a lower melting temperature may be used. Copper melts at a temperature of 1982 F. At this temperature the molten copper has an affinity for steel, and will flow into tight joints, making an excellent braze. The time in the oven is kept at a minimum so as to facilitate rapid production.

The brazing material is applied to the joints in the form of wire or paste; or, in some cases, is sprayed on with a conventional metal-spray gun. The big advantage

in this method of bonding lies in its ability to form a strong union of the various pieces without any appreciable amount of warpage in the components, or of the unit as a whole.

In the test data that have been collected by the General Electric Co., it has been found that the ultimate shear strength of copper-brazed joints average as follows:

SAE 1020 Carbon	45,000 psi
SAE 6140 Chrome Vanadium	35,000 psi
SAE 4615 Nickel Molybdenum	52,000 psi
SAE 2315 Nickel	41,000 psi

The Taylor engine, in its present form, is the result of 8 years of development work.

A general description of the engine components might give a better understanding of the simplicity in the stamping, machining, and assembly of these units. The particular unsupercharged 6-cyl model under discussion develops 250 hp at 3600 rpm, has a compression ratio of 8 3/8 to 1, a displacement of 425.88 cu. in., weighs 355 lb, and measures 53 in. long (less starter) x 31 in. high.

The cylinder block is a single unit which contains the cylinders, heads, valves, ports, and coolant jacket. It is composed of 151 separate pieces, of which 94 are simple stampings, 35 are lengths of standard seamless tubing, and 22 are simple machinings, which can be readily adapted to a screw machine or turret-lathe set-up. These various pieces are assembled and held in position by spot welding, swedging the tube ends, press fits, and threading together. At the same time, copper wire or paste is placed around each joint. When the unit is completely assembled, it is oven brazed. This fuses all joints together, making a single, simple unit of the 151 original pieces.

When the unit comes out of the furnace, it is ready for cadmium plating and finish machining. This consists of boring and honing the cylinders, milling the camshaft bearing pads in a single milling operation, boring the vertical shaft bearing housing, spot facing the 14 pads which rest on the crankcase, and boring and reaming the valve guide housings. The 16 holes for the camshaft bearings are drilled and tapped in a special jig and the block is ready for final assembly.

In its entirety, the crankcase is made of 95 separate pieces, of which 22 are simple stampings, 8 simple machinings, 30 lengths of standard tubing, and 35 pieces of flat

stock and standard washers. Assembly is similar to the cylinder block method.

After the unit is brazed, the following finish machining is required:

- Drill and tap 6 bolt holes in the thrust bearing housing.
- Bore and face the thrust bearing housing.
- Bore the 7 formers to fit the main bearing webs.
- Mill the cylinder block pads in a single milling cut.
- Bore the vertical shaft bearing housing.
- Drill and tap 12 holes for the gear case mounting.

The complete case, which is capable of mounting two cylinder blocks, weighs 70 lb.

The crankshaft consists of 25 pieces of which 6 are connecting-rod spools and 7 are main-bearing spools. All of these spools are turret-lathe parts, well suited to mass production. Checks are cut out of standard plate. The grinding and machining is simple and rapid. Weighing 85 lb complete, the crankshaft is the heaviest single part of the engine.

The connecting rods, pistons, and wristpins used on this experimental model are standard aircraft-engine parts, which may be purchased at any supply house. The valves, springs, and keepers are also standard parts. The necessity of using salt-cooled exhaust valves is avoided, as the rapid dissipation of heat through the liquid-cooled guides and seats eliminates the big problem of valve cooling, and makes the inexpensive solid valves do the job of the expensive salt-cooled type.

The whole assembly is thus reduced to the installation of the four main components; namely, the cylinder block and its assembly, the crankcase, the crankshaft and its assembly, and the rear section, or gear box.

The Taylor engine has a combination of advantages which makes it stand out as an excellent example of what may be accomplished by the fabrication methods. It is of exceptionally clean design; the service and maintenance labor have been reduced by the simplified, easily accessible units; the performance is better than other engines of the same displacement, and the design is well suited to mass production. Work to date has been purely experimental, but the results achieved seemed to indicate that when this type of construction is adapted to standard practice in engine designs, decided improvements are obtained in manufacturing and engine performance.

SAE Air Cargo Engineering Meeting



DECEMBER 8-9



Hotel Knickerbocker
Chicago, Ill.

Emergency Non-Ferrous Specs Nearing Completion

COOOPERATING in the WPB program for conservation of critical materials, all three Subdivisions of the Non-Ferrous Division, SAE Standards Committee, are completing tentative emergency alternate specifications for solders, bearing metals, and all copper, aluminum, and magnesium alloys in both cast and wrought forms. The SAE emergency specifications will be promulgated by the WPB.

The three Subdivisions — A — Light Alloys, B — Copper Alloys, and C — Miscellaneous Alloys — also have reviewed the SAE standard specifications on non-ferrous metals and have recommended revisions for publication in the SAE 1943 Handbook.

This work is accomplishing, in the non-ferrous field, practically the same program that is nearing completion in the ferrous field through the WPB Steel Branch, under the sponsorship of the SAE, the AISI, and the ASTM, with the cooperation of the military services. Both proposed emergency and revised standard non-ferrous metal specifications have been coordinated with the corresponding ASTM specifications, as far as possible and still meet the requirements and practices of the automotive industry.

W. H. Graves, Packard Motor Car Co., is chairman of the Non-Ferrous Metals Division; and P. V. Faragher, Aluminum Co. of America; L. P. Saunders, Harrison Division, General Motors Corp; and W. E. Day, Jr., Mack Mfg. Corp., are chairmen of Subdivisions A — Light Alloys; B — Copper Alloys; and C — Miscellaneous Alloys, respectively.

The present aim of the Society is to issue all emergency specifications as soon as they are adopted, in convenient form for distribution and insertion in the current SAE Handbook.

SAE Felt Standards Included in New Felt Association List

IN recognition of their wide usage and acceptance throughout the automotive industry, the SAE standards for wool felt, together with the complementary ASTM methods of test, have been included in the manufacturing standards governing the specification and purchase of wool felt for all important applications, as recently announced by the Felt Association, Inc. These standards have been designed to cover a majority of purchases by the Army and Navy and government contractors, as well as by civilian industries; they comprise nearly 250 items in seven series, all of which are designated by wool content, width, thickness, color, and tolerances. Important war applications of felt include insulation for heat, cold, sound, and vibration in aircraft, tanks, and ships; padding for parachutes; footwear; weather-masks; fuse timers; and packing cases.

Marked progress is reported by the SAE

Standards Committee in standardizing automotive and aeronautical felts, working in cooperation with the felt manufacturers and the Felt Association. Recently the Aeronautic Division completed the development of Aeronautic Material Specifications for aircraft felts — AMS 3285, 3286, 3287, 3288, 3290, and 3291, through the Airframes Materials & Processes Committee of the Aircraft Materials and Processes Coordinating Sub-

division, of which L. D. Bonham, Lockheed Aircraft Corp, is chairman. In addition, the Felt Subcommittee of the SAE Standards Committee, under the chairmanship of H. R. Wolf, Research Division, General Motors Corp., is reviewing the entire list of SAE automotive felt standards with the objective of making such revisions or changes as experience and practice with these felts indicate are desirable.

SAE WAR TRANSPORTATION & MAINTENANCE MEETING

With the cooperation of the Metropolitan Section

Austin M. Wolf, General Chairman

October 7 & 8, Hotel Pennsylvania, New York

• PROGRAM •

WEDNESDAY, OCTOBER 7

10:00 A.M. Keystone Room
Jean Y. Ray, Chairman

Expander-Type Piston Rings to Prevent Excessive Cylinder Reconditioning
— P. E. Friend, Wilkening Mfg. Co.
Based on the findings of SAE-ODT Committee No. 5 in the laboratory and in the field.

2:00 P.M. Keystone Room
Col. T. L. Preble, Chairman

Highway to Victory
— W. J. Cumming, Office of Defense Transportation
Observations of a widely known fleet operator, now Chief of the Maintenance Section, Office of Defense Transportation.

THURSDAY, OCTOBER 8

10:00 A.M. Keystone Room
Austin M. Wolf, Chairman

Standard Practice Instructions
— J. Willard Lord, Atlantic Refining Co.
Explanation of the aims and plans of SAE-ODT Committee No. 17 to improve maintenance by improving mechanical instructions.

2:00 P.M. Keystone Room
E. P. Gohn, Chairman

Metal Coating — Applications and Technique
— John Wakefield, Metallizing Engineering Co.
Progress Report of SAE-ODT Committee No. 6 which includes research on some new applications.

★ ★ ★

Banquet

WEDNESDAY, OCTOBER 7

7:00 P.M.

Grand Ballroom

Herbert H. Happersberg
Chairman, Metropolitan Section

Toastmaster
Jean Y. Ray
SAE T&M Vice President

War on Wheels — A. W. Herrington, President, SAE

The Horning Memorial Committee has decided not to award the Horning Memorial Medal for the year 1941.

New Military Data in Revised Lighting Standards

REVISED SAE test procedures for automotive lighting equipment and a new table of SAE recommended practice for lamps for military vehicles have been approved by the SAE General Standards Committee and the SAE Council. The revised test procedures supersede those published in the 1942 SAE Handbook. To make available all SAE lighting specifications in one volume, the revised procedures, the new recommended practice for military vehicle lamps, and all other SAE lighting specifications have been brought together in one booklet for use until the 1943 SAE Handbook is issued.

The revised test procedures on motor-vehicle lighting equipment include those on adverse weather lamps, clearance lamps, direction signal lamps, electric emergency lanterns, general requirements, identification lamps, license plate lamps, reflex reflectors, side-marker lamps, stop lamps, and tail lamps.

The new standard on military vehicle lamps was worked out in cooperation with the military services and manufacturers of lighting equipment by a subcommittee of the Lighting Division, SAE Standards Committee, under the chairmanship of Val J. Roper, General Electric Co. Revisions in test procedures were made by the Lighting Division of which R. E. Carlson, Tung-Sol Lamp Works, is chairman, and Mr. Roper, vice chairman.

Demonstrates Synthetic Rubber Processes

■ Capital District Group

THE Capital District Group's last meeting of the season on June 9, at the University Club, Albany, had as its speaker H. M. Fisher, commercial manager, Stanco Distributors. He pointed out the fact that natural rubber has never been perfectly imitated—that all synthetic rubbers have somewhat different chemical compositions than their natural cousin.

Various types of synthetics produced by Standard Oil Co. of N. J. were shown, and their peculiar properties demonstrated. A ball of synthetic rubber which, when thrown on the floor, refused to bounce provided one demonstration; a synthetic strip which showed great resistance to petroleum products was another.

Mr. Fisher demonstrated how rubber is made from butadiene, and also showed the process of alkylation, from which an important part of the Army and Navy's 100-octane gasoline is made. In his review Mr. Fisher brought out the value of vulcanization and the many production and transportation problems which have been encountered in the synthetic industry.

American Lava Regrets...

The American Lava Corp. has expressed great regret that its June advertisement in SAE Journal was, in part, a copy of an admirable institutional advertisement previously used by the Varnish Products Co. of Cleveland, Ohio. This inadvertence is contrary to their long established policy and they wish by this means to give due credit to the originator of such a brilliant inspiration.



A recent meeting of the aircraft engine Drafting Room Practices Committee. Present were:

(Left to right): J. G. Schweiger, Ranger Aircraft Engines; H. W. Epler, Lycoming Division, The Aviation Corp.; E. W. Rentz, Jr., SAE headquarters staff; J. G. Perrin, Pratt & Whitney Aircraft, and chairman of the Committee; R. S. Kellog, Packard Motor Car Co.; P. V. Richards, Wright Aeronautical Corp. Absent from this meeting was C. R. Reynolds, Allison Division, General Motors Corp.



Present at a meeting of the Aircraft Electrical Equipment Committee were:

(Left to right): W. F. Fell (guest), Eclipse Aviation Division, Bendix Aviation; Ken Smythe (guest), Glenn L. Martin Co.; E. G. Haven, General Electric Co.; E. E. Minor, Glenn L. Martin Co.; Major T. B. Holliday (guest), Equipment Division, Materiel Center, Wright Field; C. C. Shangraw, Eclipse Aviation Division, Bendix Aviation, chairman of the Committee; E. W. Rentz, Jr., SAE headquarters staff; J. W. Allen (guest), Bureau of Aeronautics; F. W. Godsey, Jr. (guest), and J. D. Miner (guest), both of Westinghouse Electric and Mfg. Co.

NEW MEMBERS Qualified

These applicants who have qualified for admission to the Society have been welcomed into membership between July 15, 1942, and Aug. 15, 1942.

The various grades of membership are indicated by: (M) Member; (A) Associate Member; (J) Junior; (Aff.) Affiliate Member; (SM) Service Member; (FM) Foreign Member.

Baltimore Section

Hovgard, Paul E. (M) chief designer, Glenn L. Martin Co., Baltimore.

Leonberger, Walter S. (A) partner, Duke Electric Co., 849-51 Greenmount Ave., Baltimore.

Buffalo Section

Cunningham, Francis E. (A) president, Cunningham-Hall Aircraft Corp., 13 Canal St., Rochester, N. Y.

Moore, Richard E. (J) engineer, Bell Air-

craft Corp., Buffalo (mail) 300 Knowlton Ave., Kenmore, N. Y.

Perkins, Charles E. (M) superintendent, Plant No. 2, Houde Engineering Division of Houdaille-Hershey Corp., 537 E. Delavan Ave., Buffalo.

Canadian Section

Lace, George Sutton (M) engineer officer, Aircraft Production Branch, Department of Munitions & Supply, Ottawa, Ont. (mail) 424 Tweedsmuir Ave., Westboro.

New, Frederick William (A) head ma-

chinnist Ace Automotive Parts & Machine Co., 1357 Bay St., Toronto, Ont. (mail) 186 River st.

Philips, Clifford Edwin (A) district manager, Perfect Circle Co., Ltd., Toronto, Ont.

Rolph, Ray C. (A) sales manager, Willard Storage Battery Co. of Canada, Ltd., 269 Campbell Ave., Toronto, Ont.

Shapley, James E. (F M) production engineer, Reliance Aircraft & Tool Co., Ltd., Box 400, Belleville, Ont.

Wood, Gordon Lewis (A) salesman, territory supervisor, British American Oil Co., Ltd., Pembroke, Ont.

Chicago Section

Healy, Alfred A. (M) production manager, Aero Screw Co., 13th St. & 19th Ave., Rockford, Ill. (mail) 957 N. Main St.

Lewark, Robert J. (I) carburetor test engineer, Bendix Products Division, Bendix Aviation Corp., South Bend, Ind. (mail) 746 S. Falcon St.

Loch, Joseph (I) junior inspector trainee, U. S. Army, Chicago Ordnance District, 38 S. Dearborn St., Chicago (mail) 2027 N. Sheffield, Ave.

McCoy, Ewald H. (I) non-ferrous analytical chemist, Aviation Division, Studebaker Corp., Chicago (mail) 4756 Drexel Blvd.

Payette, Joseph L. (A) U. S. Army, Office of the Quartermaster, Sixth Corps Area Headquarters, 20 N. Wacker Dr., Civic Opera Bldg., Chicago (mail) 5835 Merrimac Ave.

Zeisloft, Harry C. (I) junior research and development engineer, Bendix Products Division, Bendix Aviation Corp., 401 Bendix Dr., South Bend, Ind. (mail) 312 N. Hamden Court.

Cleveland Section

Barrett, George N., Jr. (M) metallurgist, Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland (mail) 2992 Meadowbrook Blvd., Cleveland Heights, Ohio.

Wheaton, Charles B. (A) owner, Simplex Automotive Parts, 304 E. 70th St., Cleveland (mail) 1007 Elbon Rd., Cleveland Heights, Ohio.

Dayton Section

Schaefer, William E. (I) draftsman, General Machinery Corp., Hamilton, Ohio (mail) 317 Eaton Rd.

Detroit Section

Bigos, Walter (M) project engineer, Continental Aviation & Engineering Corp., Detroit (mail) 2195 Belmont St., Hamtramck, Mich.

Black, L. Russell (A) sales engineer, Monroe Auto Equipment Co., Monroe, Mich.

Brescoll, George P. (M) standards engineer, Packard Motor Car Co., Detroit (mail) 916 Lockwood Rd., Royal Oak, Mich.

Burnette, Howard E. (I) draftsman, Continental Aviation & Engineering Corp., 12801 Jefferson Ave., E., Detroit (mail) 690 Dickerson St., Apt. No. 6.

Cataldo, Francis Henry (I) production planner, Bromley Engineering Co., Detroit (mail) 13180 Monica St.

Child, L. Wallace (M) chief engineer, Evans Products Co., 15310 Fullerton, Detroit.

Edmonson, Glenn V. (M) staff engineer, Hydraulic Coupling Division, American Blower Corp., 6000 Russell, Detroit (mail) 15515 Mansfield.

Ford, Benson (A) executive, Ford Motor Co., Dearborn, Mich.

Inskeep, Oliver W. (M) charge of engine design, Research Laboratories, General Motors Corp., Detroit (mail) 18252 Tracey Ave.

tors Corp., Detroit (mail) 18252 Tracey Ave.

McCullough, W. E. (M) chief metallurgist, Bohn Aluminum & Brass Corp., 1400 Lafayette Bldg., Detroit.

Norwick, William Kenneth (A) supervisor, Fisher Body Detroit Division, General Motors Corp., 465 W. Milwaukee Ave., Detroit.

Peterson, Alfred H., Jr. (I) general engineering, Precision Spring Corp., 15400 Woodrow Wilson Ave., Detroit.

Roberts, W. Stewart (S M) ordnance engineer, U. S. Army, War Department, Tank Engineering Office, 1600 Fisher Bldg., Detroit.

Indiana Section

Bacon, Robert L. (I) dynamometer operator, International Harvester Co., Inc., Fort Wayne, Ind. (mail) 729 W. Wildwood Ave.

Ferguson, Thos. B. (M) lubrication engineer, Standard Oil Co. of Ind., Indianapolis (mail) 2859 N. Meridian St.

Henry, Millard M. (M) engineer, Delco-Remy Division, General Motors Corp., Anderson, Ind.

McTarsney, Robert T. (I) service representative, Allison Division, General Motors Corp., Indianapolis (mail) 406 Keck Ave., Evansville, Ind.

Mitchell, J. E. (I) metallurgist, Marmon-Herrington Co., Inc., Indianapolis (mail)

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Metropolitan Section

Cohen, Alexander (J) associate procurement inspector, U. S. Army, War Department, Air Corps, Materiel Division, 90 Church St., New York City (mail) 361 Montauk Ave., Brooklyn, N. Y.

Comer, Thomas F. (M) test engineer, Simmonds Aerocessories, Inc., 21-10 49th Ave., Long Island City, N. Y.

Coon, Seneca G., Jr. (J) design draftsman, Mack Mfg. Corp., Plainfield, N. J.

(mail) 6 S. Springfield Ave., Springfield, N. J.

Cravens, Benjamin B. (M) transportation engineer, Liebmann Breweries, Inc., 36 Forrest St., Brooklyn, N. Y. (mail) 42-15 81st St., Elmhurst, L. I., N. Y.

Dawson, William H., Jr. (J) junior engineer, Wright Aeronautical Corp., Division of Curtiss-Wright Corp., Paterson, N. J. (mail) 35 Clinton Ave., Ridgewood, N. J.

Funk-Argust, Frank, Lt. (J) U. S. Army, 151st Q.M. Company (LM), A.P.O. 868, c/o Postmaster, New York.

Grouleff, Paul Henry, Lt.-Com. (S M) U. S. Navy, U.S.S. Marlin, c/o Postmaster, New York.

Hamilton, J. Willard (J) project engineer, Titeflex Metal Hose Co., 500 Frelinghuysen, Newark, N. J. (mail) 18 Gardiner Pl., Montclair, N. J.

Hebert, Donald R. (J) student engineer, Wright Aeronautical Corp., Division of Curtiss-Wright Corp., Paterson, N. J. (mail) 816 Valley Rd., Upper Montclair, N. J.

Hohorst, Henry, Jr. (A) president, treasurer, Hohorst, Inc., 35 Garfield Ave., Jersey City, N. J. (mail) 860 Morningside Rd., Ridgewood, N. J.

Huston, Putnam S. (A) production control engineer, American Type Founders, Elizabeth, N. J. (mail) 31 Aubrey Rd., Montclair, N. J.

Jackson, Paul R. (J) draftsman, Wright Aeronautical Corp., Division of Curtiss-Wright Corp., Paterson, N. J. (mail) 366 Van Houten St.

Kelly, John Edward (J) tool designer, Lawrence Engineering & Research Corp., Linden, N. J. (mail) 545 Somerset St., North Plainfield, N. J.

Koenig, William W. (J) methods engineer, Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y. (mail) 45-21 41st St., Sunnyside, L. I., N. Y.

Parilla, Arthur R. (M) chief engineer, Chicago Pneumatic Tool Co., Garfield, N. J. (mail) 320 Churchill Rd., West Englewood, N. J.

Perry, Lawrence Henry (A) manager, New York office, S. K. Wellman Co., 50 Church St., New York City.

Queen, George (A) assistant supervisor, Linden Division, General Motors Corp., Linden, N. J. (mail) 760 Nicholas Pl., Rahway, N. J.

Schaal, K. R. (A) president, U. S. Tire Supply Co., Inc., 675 11th Ave., New York City.

Stoecker, Carroll L. (J) junior engineer, American Airlines, Inc., Municipal Airport, Jackson Heights, L. I., N. Y. (mail) 143-17 38th Ave., Flushing, L. I., N. Y.

Taylor, Richard (A) service manager, Ramapo Auto Sales Co., Inc., Suffern, N. Y. (mail) 138 Orange Ave.

Waring, Robert W. (M) materials engineer, Sperry Gyroscope Co., Inc., Manhattan Bridge Plaza, Brooklyn, N. Y.

Yee, Robert Fon (M) stress analyst, Republic Aviation Corp., Farmingdale, L. I., N. Y. (mail) P. O. Box 503.

Milwaukee Section

Dixon, E. O. (M) chief metallurgist, Ladish Drop Forge Co., Cudahy, Wis. (mail) 5105 Superior, Milwaukee.

Webber, John A. (M) metallurgical engineer, Interstate Drop Forge Co., 4051 N. 27th St., Milwaukee.

New England Section

King, George Tiffany, Capt. (S M) U. S. Army, Headquarters First Corps Area, Boston, Mass. (mail) 88 Washington St., Brighton, Mass.

Wishman, Harry W., Jr. (A) president, treasurer, Preferred Products, Inc., 142 St. Mary's St., Boston, Mass.

Northern California Section

Batchelder, A. H. (M) division supervisor, charge of fuels, etc., Standard Oil Co. of Calif., Research & Development Dept., Richmond, Calif.

Berry, Benjamin M. (M) research engineer, Standard Oil Co. of Calif., Richmond, Calif.

Brockwell, Lloyd Alfred (J) junior engineer, Shell Development Co., Emeryville,

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Edlisen, Robert (J) engineer, Joslyn & Ryan, San Francisco (mail) 1040 Weeks St., East Palo Alto, Calif.

Harrington, George E. (A) chief inspector, Hall-Scott Motor Car Co., Berkeley, Calif. (mail) 1114 Ordway St., Albany, Calif.

Steck, Gordon E. (M) mechanical engineer, Hall-Scott Motor Car Co., 2850 Seventh St., Berkeley, Calif. (mail) 1906 Tiffin Rd., Oakland, Calif.

Wheeler, Grant M. (M) research engineer, Tide Water Associated Oil Co., Associated, Calif.

Northwest Section

Bellamy, Merle C. (A) district manager, industries division, Timken Roller Bearing Co., 321 E. Pine, Seattle, Wash.

Bullock, Alden D. (J) mechanic, Kenworth Motor Truck Corp., Seattle, Wash. (mail) 604 Kinnear Pl.

Egbert, Sherwood Harry (J) assistant to superintendent, Boeing Aircraft Co., Seattle, Wash. (mail) 242 32nd Ave.

Lidral, John Packard (J) mechanical engineer, Boeing Aircraft Co., Seattle, Wash. (mail) 1305 Queen Anne Ave.

Pingrey, Albert Walter (A) automotive instructor, J. M. Perry Institute, Yakima, Wash. (mail) 104 N. Seventh St.

Seaberg, Carl R. (A) shop superintendent, Inland Petroleum Transportation Co., Inc., Seattle, Wash. (mail) 10927 Sheridan Rd.

Peoria Section

Johnson, Lloyd Edward (J) research supervisor, Caterpillar Tractor Co., Peoria, Ill. (mail) High View Rd., R. R. 6, Box 156, East Peoria, Ill.

Philadelphia Section

Hunt, Clarence G. (A) laboratory mechanic, Socony-Vacuum Oil Co., Inc., General Laboratory, Paulsboro, N. J. (mail) 113 N. East Ave., Wenonah, N. J.

St. Louis Section

Strasser, William H. (A) superintendent of equipment, Midland Bus Co., St. Louis, Mo. (mail) 6413 St. Louis Ave.

Southern California Section

Baldwin, John D., Jr. (A) engineer, Weatherhead Co., 6030 Wilshire Blvd., Los Angeles.

Bedal, Eugene Delmar (J) layout draftsman, Douglas Aircraft Co., El Segundo, Calif. (mail) 1748 Bentley Ave., West Los Angeles, Calif.

Bodner, Charley Herbert (J) hi-cycle development, Vega Aircraft Corp., Burbank, Calif. (mail) 3941 Weslin Ave., Sherman Oaks, Calif.

Bostwick, Paul Lee (A) service and sales, Highland Park Chevrolet Co., 5001 N. Figueroa St., Los Angeles (mail) 2810 Lorain Rd., San Marino, Calif.

Cleves, William B. (A) vice president, Yellow Cab Co. of Calif., 1308-22 W. Third St., Los Angeles.

Farrar, Charles Warner, Jr. (J) checker, Douglas Aircraft Co., Inc., El Segundo, Calif. (mail) 1034 E. Palm Ave., Burbank, Calif.

Filbry, Herman William (J) material engineer, Consolidated Aircraft Corp., Pacific Blvd., Lindbergh Field, San Diego, Calif. (mail) 7125 E. Hyatt St.

Hollowell, Robert M. (J) engineer, Six

Wheels, Inc., 1584 E. 20th St., Los Angeles (mail) 5016 Institute Pl.

Jones, David B. (A) machinist, Dale Auto Parts, 1312 18th St., Bakersfield, Calif. (mail) 706 Arvin St.

Kirkpatrick, Harlow B., Jr. (J) engineer, power plant, Douglas Aircraft Co., Inc., 3000 Ocean Park Blvd., Santa Monica, Calif. (mail) 1120 Via de La Paz, Pacific Palisades, Calif.

Nickerson, Douglas Blain (J) layout draftsman, Lockheed Aircraft Corp., 1705 Victory Pl., Burbank, Calif. (mail) No. 2, 225 S. Les Robles St., Pasadena, Calif.

Shepherd, Bruce Daniel (M) chief, tool designer, North American Aviation, Inc., Inglewood, Calif. (mail) 4134 Victoria Ave., Los Angeles.

Southern New England Section

Auto-Ordnance Corp. (Aff) 1437 Railroad Ave., Bridgeport, Conn. Rep: Myers, Don.

Doherty, Gerald Hancock (J) test engineer, Hamilton Standard Propellers, Division of United Aircraft Corp., East Hartford, Conn. (mail) P. O. Box 132, Glastonbury, Conn.

Hoffman, Max (M) sales engineer, Amer-

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ican Bosch Corp., Springfield, Mass. (mail) 32 Trillium St.

Roisman, Milton (J) carburetor mechanic, Pratt & Whitney Aircraft, Division of United Aircraft Corp., East Hartford, Conn. (mail) 732 Silver Lane.

Southwest Group

Wallace, Roy C., Jr. (A) welder, Spartan Aircraft Co., Tulsa, Okla. (mail) 2116 E. Second St.

Texas Group

Lockwood, Fred H. (A) director, public

relations, Guiberson Diesel Engine Co., Dallas, Tex.

Washington Section

Barnitz, Fred B. (A) special representative, Mack-International Motor Truck Corp., 2121 W. Virginia Ave., N. E., Washington.

Egger, Ray H. (J) assistant automotive engineer, U. S. Army, Ordnance Department, Maintenance Division, Tank Unit, Washington (mail) 2009 H St., N. W.

Feinberg, George K. (A) proprietor, Automotive Tire & Service Co., 94 Massachusetts Ave., Cambridge, Mass. (mail) Co. C-12th Regiment, Camp Lee, Va.

Morris, William C. (J) assistant automotive engineer, War Department, Office of Chief of Ordnance, Tank & Combat Vehicle Division, Washington (mail) 3148 Wisconsin Ave., N. W.

Vegren, Conrad R., 1st Lieut. (S M) associate engineer, War Department, Ordnance, Tank & Combat Vehicle Division, Washington (mail) 3100 Warder St., N. W.

Outside of Section Territory

Benjamin, William G. (M) experimental engineer, Continental Motors Corp., Muskegon, Mich. (mail) 1542 Peck St.

Evans, Wendell G. (J) assistant experimental engineer, Lycoming Division, Aviation Mfg. Corp., Williamsport, Pa. (mail) 1111 W. Fourth St.

Drury, William T., Jr. (M) maintenance manager, Southeastern Greyhound Lines, 801 N. Limestone St., Lexington, Ky.

Kidneigh, E. L. (A) engine house foreman, Florida East Coast Railway Co., St. Augustine, Fla. (mail) 2163 N. W. 26th St., Miami, Fla.

Marshall, Daniel Arthur, Jr. (J) layout draftsman, Lycoming Division, Aviation Corp., Williamsport, Pa. (mail) 1019 N. Market St.

Micka, Frank, Jr. (J) project engineer, Pan American Airways, Inc., Miami, Fla. (mail) 2255 S. W. Seventh St.

Poehlmann, Alfred E. (S M) head instructor, officers, U. S. Army, Fort Crook Quartermaster Motor Transport School, Fort Crook, Neb. (mail) 4214 Meredith Ave., Omaha, Neb.

Raettig, Alvin Ernest, Jr., Lt. (J) U. S. Army, 2nd Battalion, 53rd Q.M. Regiment, Fort Benning, Ga.

Smethers, John H. (J) instructor, Department of Motor Transport, Field Artillery School, Fort Sill, Okla.

Stevens, Edward J., Jr. (M) automotive engineer, Socony-Vacuum Oil Co., Inc., 48 Main St., South Portland, Me. (mail) 28 Beacon St., Portland, Me.

Tanner, Theodore J. (M) chief maintenance engineer, Eastern Air Lines, Inc., Miami, Fla. (mail) P. O. Box 338, Miami Springs, Fla.



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APPLICATIONS Received

The applications for membership received between July 15, 1942, and Aug. 15, 1942, are listed below. The members of the Society are urged to send any pertinent information with regard to those listed which the Council should have for consideration prior to their election. It is requested that such communications from members be sent promptly.

Baltimore Section

Marcus, Wilbur, Ensign, Post Graduate School, U. S. Naval Academy, Annapolis, Md.

Rowe, William Henry, naval architecture student, U. S. Naval Reserve, Post Graduate School, U. S. Naval Academy, Annapolis, Md.

Canadian Section

Mero, Harry J., president, Truscon Steel Co. of Canada, Ltd., Walkerville, Ont.

Chicago Section

Knapp, Wallace H., junior engineer, Bendix Products Division, Bendix Aviation Corp., South Bend, Ind.

Mackmann, Arthur, vice president in charge of research, Foote Bros. Gear & Machine Corp., Chicago.

Cleveland Section

Bolz, Roger William, assistant works engineer, National Carbon Co., Inc., Cleveland.

Green, Daniel C., chairman of the board, Cleveland Pneumatic Tool Co., Cleveland.

Honroth, Kenneth A., designer, Jack & Heintz, Inc., Bedford, Ohio.

Dayton Section

LaMar, Stanley W., aircraft layout engineer, Waco Aircraft Co., Troy, Ohio.

Detroit Section

Becker, Martin Fredrick, laboratory technician, Chrysler Corp., Detroit.

Flynn, Gregory, Jr., project engineer, Research Laboratories Division, General Motors Corp., Detroit.

Lubeck, Charles Martin, supervisor-lifting, Willys-Overland Motors, Inc., Toledo, Ohio.

Van Stee, Robert C., material survey, Fisher Body Division, General Motors Corp., Detroit.

Wyss, Walter, mechanical engineer, Stout Engineering Laboratories, Inc., Dearborn, Mich.

Indiana Section

Blair, B. Guy, design and layout, Allison Division, General Motors Corp., Indianapolis.

Kansas City Section

Hudson, Finn S., chief engineer, Keystone Trailer Co., Kansas City, Mo.

Walker, Robert A., aircraft power plant project engineer, Transcontinental & Western Air, Inc., Kansas City, Mo.

Metropolitan Section

Anderson, William G., instructor of mechanical engineering, Newark College of Engineering, Newark, N. J.

Bandzevich, John F., senior test engineer,

Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Braummiller, George C., purchasing agent, Breeze Corporations, Inc., Newark, N. J.

Dauter, George A., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Detra, Irvin G., experimental test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Edwards, James Leon, student engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Ellis, Forest D., experimental test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Fischer, Ernest F., test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Fischer, Richard Henry, engineering trainee, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

FitzGerald, James W., junior experimental test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Freeman, Phillip B., test engineer, Ranger Aircraft Engines, division of Fairchild Engineering & Airplane Corp., Farmingdale, L. I., N. Y.

Garrett, Hugh Morgan, experimental test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Gatto, Attilio Arthur, instructor, Electro Products Co., New York City.

George, Charles M., junior experimental test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Grange, Robert Douglass, senior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Gundel, Robert B., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Hackney, Clarence W., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Hafemeyer, Alfred J., territory representative, Bear Mfg. Co., Rock Island, Ill. Mail: Glendale, L. I., N. Y.

Hansen, Hans, staff engineer, American Type Founders, Inc., Elizabeth, N. J.

Irons, Harvey C., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Kibbe, Ike, junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Kirk, Howard Franklin, Jr., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Koetsch, Julius Frank, aviation cadet, U. S. Naval Air Station, Pensacola, Fla. Mail: 257 Covert St., Brooklyn, N. Y.

Kreidler, Frank G., field engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Lamb, Daniel Harrison, junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Leggett, Joseph H., test engineer, experimental department, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

LeMay, Ernest G., Jr., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Leming, John Curtis, junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Moyer, Charles R., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

O'Brien, George H., junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Parker, Lester M., junior experimental test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Pifer, Lewis Weaver, junior test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

Pitts, Charles N., test engineer, Wright Aeronautical Corp., division of Curtiss-Wright Corp., Paterson, N. J.

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Aircraft Engineering

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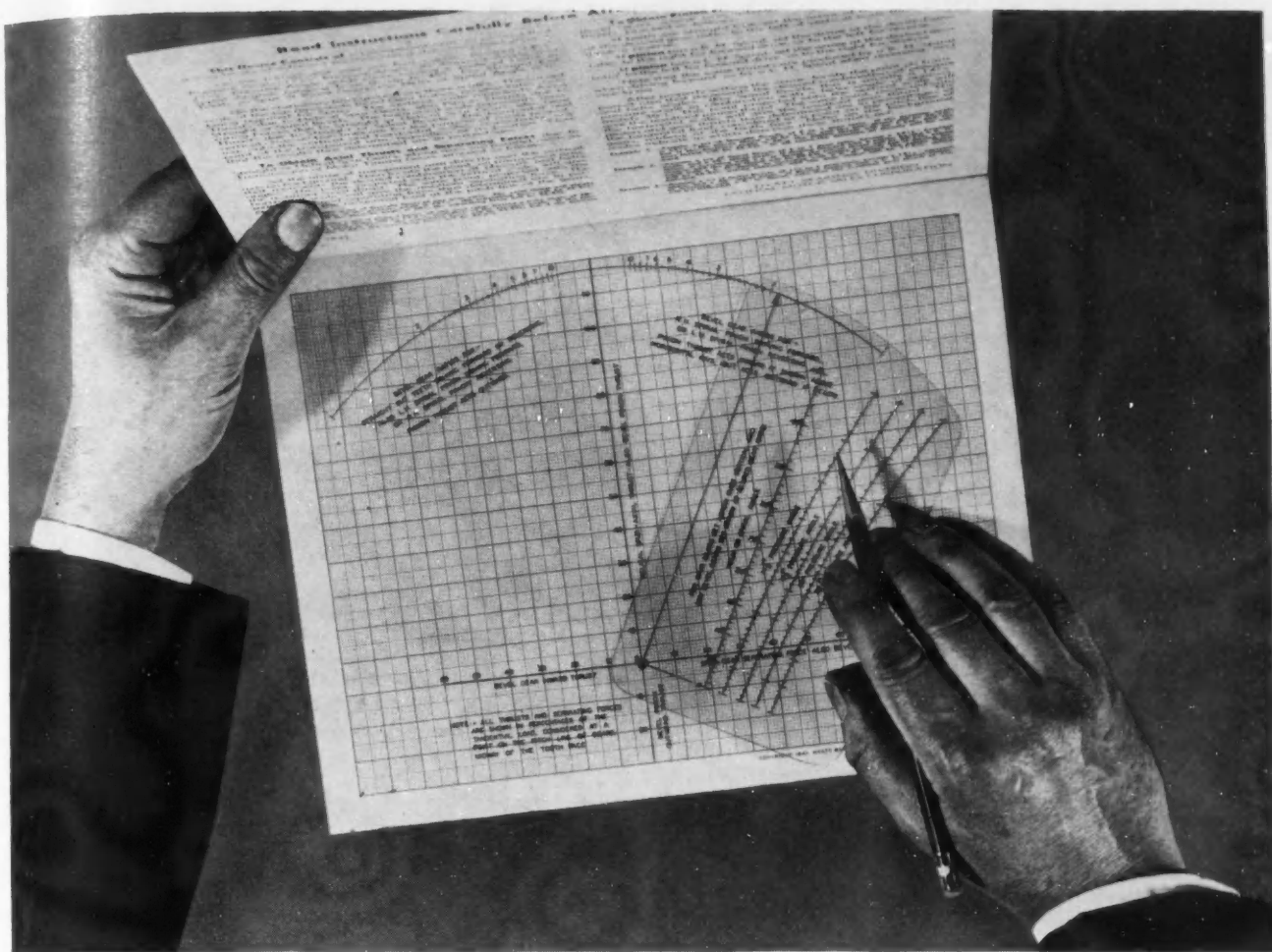
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War Plant Accident Rate Still Climbs

With 1½ billion manhours of work lost through accidents last year, the Navy is stressing plant safety. Other government agencies are talking about a combined nation-wide effort to curb industrial accidents, but nothing comprehensive has resulted from more than a year of talk.

Individual plant efforts, such as major automobile companies, have been praised by WPB, Army, Navy and Maritime Commission for reducing the costly toll.

Public Construction Doubles Private

Total private and public construction during the first half of 1941 was about \$2.4 billion, and for the same period of this year ran beyond \$6 billion.

Private and public construction ran about neck and neck a year ago, but the ratio is about two dollars for public construction to one of private development, this year.

Used Machinery Census Begun

ONE of the most complicated cataloging jobs in the present war effort is under way with the Office of Price Administration's "master" catalog of the nation's machinery and parts, new and used.

Purpose:

- To provide OPA with a basis for administering Maximum Price Regulation No. 136, as amended, establishing maximum prices,

- To develop an accurate census of all idle machinery in U. S. for WPB and OPA, amplifying OPA's present stock list with a parts list,

- To locate obsolete machines containing thousands of tons of scrap materials. Unless machines in this category can be reconditioned, they will be scrapped by the Conservation Division, WPB.

OPA estimates that the catalog will contain something like \$1 billion worth of idle used machines, or about 500,000 units.

Inventory forms (2:10:P1) have been sent to thousands of machinery dealers upon which they are asked to tabulate their inventories. Department of Labor's Wage & Hours Division will aid OPA in the census.

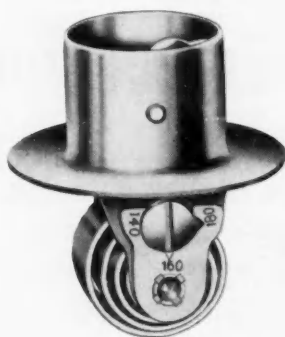
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Will Advise on Air Transport Personnel

Air transport personnel problems will be studied by a special committee named by Office of Defense Transportation. Its members:

- Col. Edgar S. Gorrell, president, Air Transport Association of America,
- Samuel J. Solomon, president, Northeast Airlines, and
- Robert McGrath, personnel director, ATA of A.

Otto S. Beyer is director of ODT's division of transport personnel and member of War Manpower Commission.

Metals Chiefs Stimulate Output in New Drive

Integration of the Copper, Lead, and Zinc branches of the WPB Division of Materials with the WPB Production Drive was the first of a series of such efforts to stimulate materials efforts for increasing materials production.

Chiefs of these branches will work with a special section formed by Wendell Lund, director of WPB's Labor Production Division.

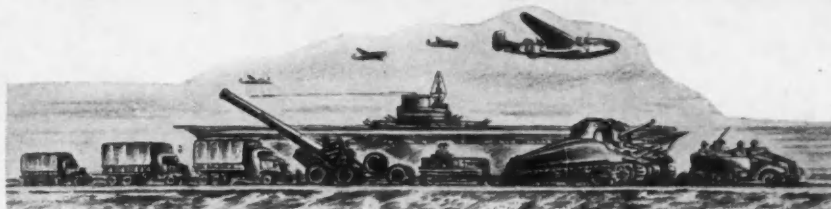
Outline of the plan was developed by major mining companies and representatives of unions.

Industrial Trucks Limited

Approved standard models of industrial power trucks which manufacturers are permitted to make, issued by WPB (Supplemental Limitation Order L-112-A, Aug. 15), establishes strict control to conserve materials by elimination of types.

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News of the
NOVEMBER
Issue

NOVEMBER —

Aeronautical Issue

Lt.-Gen. Henry H. Arnold, Commanding General, Army Air Forces, and Vice-Admiral J. H. Towers, Commander of Air Force, Pacific Fleet, are the headliners of the November Special Aeronautical Issue of the SAE Journal.

What World War II is teaching about military aircraft, aircraft engines, and aircraft equipment will be summarized and analyzed by these two men-who-know. Both are writing engineering articles especially designed for SAE Journal readers.

BESIDES—other important military and civilian authorities are pooling their talents to bring to automotive engineers the latest technical information snatched from the womb of war.

Major-Gen. Harold L. George, Commanding General, U.S.A.F. Ferrying Command, is writing an exclusive, authoritative, interpretative analysis of the red-hot military transport plane situation. It will be based upon facts and data being daily accumulated from every quarter of the globe on all the important fronts of this the greatest battle for democracy.

Col. D. G. Lingle and Com. G. A. Seitz of the Working Committee of The Aeronautical Board are preparing for this issue a special article describing the directive under which this Working Committee functions, and the success being obtained in bringing the Army and Navy together on standards.

T. P. Wright, Deputy Director of Aircraft Production, WPB, tells the stirring story of "The War Production Effort in Aircraft" in a special, authoritative article.

Major Nathaniel F. Silsbee, Army Air Forces, will analyze aircraft design and combat performance of American and enemy planes in another important, interpretive article.

Dramatic Pictures

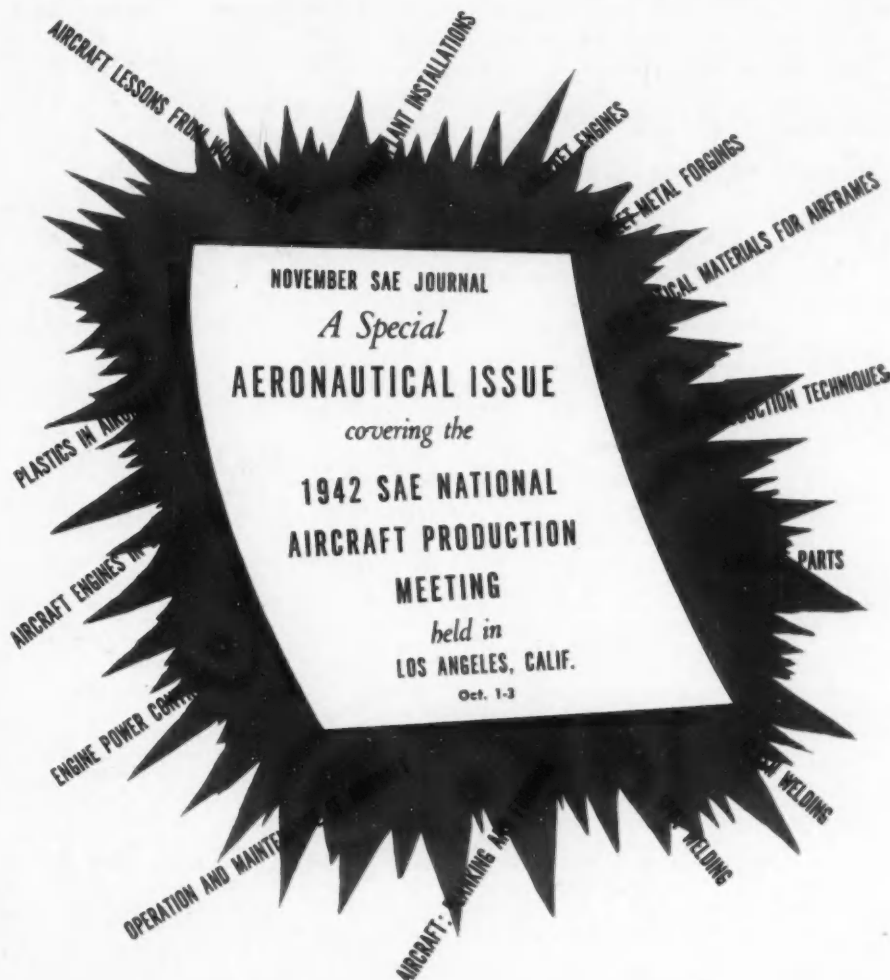
Prominent Army and Navy spokesmen are arranging to tell a dramatic picture-and-caption story of the leading types of military aircraft for this November issue—a story that will be of particular interest to the engineers who are not directly engaged in aircraft work, but whose interest in our fighting planes has grown apace as war clouds grew darker.

Aero Transactions

Aeronautical papers will fill the entire Transactions Section of the November Issue. Included will be

the striking, detailed analysis of the design features of the Junkers 211 B aircraft engine for which readers have been waiting; a penetrating analysis of fuel consumption from an airlines viewpoint; a study by two leading civilian engineers of the engineering problems associated with air cargo transportation; and an important article on limiting factors for overhaul periods for aircraft engines.

AND IN ADDITION, this November Special Aeronautical Issue will contain a complete, session-by-session report of the 1942 SAE National Aircraft Production Meeting.



"Keep 'Em Flying" To Live As Slogan of Air-Cargo Business

"KEEP 'EM FLYING" promises to perpetuate itself after the war as the slogan of the air-cargo business, but will be dictated by economic necessity rather than sentiment. Profit and cost margins will be such that every minute spent on the ground will represent a dollar loss.

R. D. Kelly and W. W. Davies, of United Air Lines Transport Corp., writing for the November Aeronautical issue of the SAE Journal, predict that cargo planes will carry passengers and that passenger planes will carry cargoes in the future. They talk in terms of flying two-, three- and four-engine planes of 20,000 to 60,000 lb gross weight with two- and three-man crews over 200 to 500 mile routes at direct operating costs of between 10¢ and 20¢ per ton-mile.

They visualize the carriers as three types: long-haul de luxe planes carrying passengers, baggage, and mail; medium- and short-haul passenger planes carrying some cargo; and medium- and short-haul cargo planes carrying a few passengers. Since the cargo planes will, upon occasion, carry passengers—chiefly to make connections with through planes—it is recommended that all cargo planes be fully equipped, be designed to provide reasonable comfort for passengers and safe stowage for cargoes, and especially be equipped and prepared to cope with adverse weather and flying conditions. Main-

taining the schedule, regardless of weather, is held to be essential to cargo transportation.

Costly ground time must be reduced approximately to the 2 min now required for streamlined trains to change crews, passengers, and baggage at station-stops, it is pointed out, and expeditious transfer of shipments and passengers at airports will have to be developed to an efficiency currently unknown. Plane and ground crews will have to be equipped and trained to load, stow, and unload cargoes so rapidly that ground time will be reduced to an absolute minimum, for every minute lost at the airport requires 11 hp additional for a DC-3 plane to maintain the flying schedule.

Helpful to this end, it is suggested, is packaging cargoes in containers having dimensions which are multiples of 6x6x6 in. penalizing out-size packaging, and using wing as well as fuselage space for stowing cargo so securely it will withstand the roughest trips.

It is predicted that ton-mile operating costs will vary little between plane sizes within the size range studied, which probably will be determined by the cargo market. The future will find either—or both—many small planes and a few large planes flying the cargo routes.

German Aircraft-Engine Study Explodes Myths

DESIGN features of the Junkers Jumo engine which powers a large percentage of German military planes will be revealed in the special November aeronautical issue of the SAE Journal as following generally established engineering practices and as being largely lacking in mechanical novelty. Some borrowing from American engineering practices is indicated.

The myth of German superiority of equipment is exploded by Sidney Oldberg and Thomas M. Ball, of Chrysler Corp., who indicate, after comprehensive analysis of a 211B Jumo engine removed from a captured JU-88 twin-engine bomber, that the engine represents a good but not particularly outstanding engineering job. Used also in Heinkel He-111-K twin engine and Focke-Wulf FW-200-K long-range four-engine bombers and in the Junkers JU-87-B single-engine dive bomber, the Jumo was said to be made from materials which indicated no pronounced shortage of strategic alloying elements. In fact, steels show such remarkably high chromium content and such low hardness and tensile properties as to question efficiency of manufacture.

The 12-cyl inverted-vee engine was made with care and precision, but with more emphasis upon design than production. Machining errors in larger castings were corrected by hand work. Parts expected to require service replacement are interchangeable. The engine follows German practice of large displacements and conservative operating speeds. The relatively light weight

per unit of displacement results in a net power output per pound comparable with competitive engines.

Chief novelties are the direct fuel-injection system, replacing the carburetor, and fully automatic devices controlling propeller speed, manifold pressure, mixture ratio, spark advance, and supercharger gear ratio—provided to remove all possible distractions from the pilot.

Curious features are the absence of timing marks and the use of complex gear trains employing 30 gears and splines to drive from the crankshaft to the camshafts.

Airline Operators Also Worried About Mileages

HOW to get "more miles per gallon" appears to be a problem which is worrying airline operators even more than it does an "A"-book motorist down to his last few ration tickets.

With the airlines, gasoline mileage is a multiple problem in which are involved both economic and technical factors—profit and loss, headwinds and tailwinds, cruising speeds and horsepower, taxiing and take-off, cruise levels and descent. Furthermore, the worry is not merely over miles per gallon, but about barrels per hour!

The complicated problem will be discussed in the November "Aeronautical" issue of the SAE Journal by Chief Engineering Pilot M. G. Beard, of American Airlines, Inc., who seeks, among other objectives, to ascertain how greater gasoline savings may be made during the war emergency. He indicates that a brisk tailwind is as effective

as anything, but since both tailwinds and headwinds are unreliable—and affect the plane's gasoline consumption by a mile or more per gallon either way—some more dependable factor must be found.

Factors pertinent to mileage appear to be almost as fickle as the winds, Mr. Beard discovers. Even ascertaining gasoline consumption per plane or per flight with any degree of accuracy is a problem in itself. Variation in bookkeeping methods, in measuring the power output of various motors, in the fuels themselves, and in the operation of planes contribute to the confusion.

Mr. Beard points out that using the torquemeter to measure horsepower output is the most accurate method and suggests that reduction of horsepower and of the cruising speeds at which airliners operate about 80% of the time would contribute to gasoline conservation.

On a transcontinental schedule, he estimates, 12 gal of gasoline per flight can be saved, by reducing horsepower and cruising speed so that the trip takes 15 hr and 36 to 40 min instead of 15 hr flat. Reducing the speed less than 20 mph would add 1 hr and 20 min to the trip, but it would save 21 gal of gasoline.

Mr. Beard points out that, obviously, savings of from one-quarter to one-half barrel per flight are not so much but, in the course of a year, total savings would amount almost to 8,000,000 gal, or about 10% of total 1941 fuel consumption of all airlines operating in America.

Engine-Overhaul Headache Remedies

EPITOME of mechano-economic razzle-dazzles and provocative of chronic arguments and headaches is aircraft engine maintenance, particularly overhaul. Essential part of a plane, which cannot be productive without it, the engine must be overhauled periodically at a cost which represents almost 20% of maintenance overhead, plus loss from idle equipment.

If the engine isn't overhauled periodically, it wears so excessively as to demand premature replacement in part or in toto—a still greater item of expense. Obviously, if these economic interludes could be curtailed in frequency, increased operating efficiency and financial benefits would accrue; the effect is the same as increasing production. Yet the factors which necessitate overhauls are so numerous, related, and complicated as to become subjects for prolonged engineering argument.

In the November "Special Aeronautical" issue of SAE Journal, Project Engineer Marvin Whitlock, of American Airlines, Inc., will suggest how the periods between overhauls might be extended to 1500 hr from the present 500 to 700 hr. He endeavors also to pin down the direct cause of the present frequency of overhauls to the volume of crankpin centrifuged deposit and to general lack of cleanliness in the engine.

Engineer Whitlock prescribes these remedies: decreasing the sludging tendency of lubricating oil, reducing lead deposits by improvement both of ring sealing and of fuel refining, and providing really effective filtering facilities for the lubrication system. He makes plain that these are remedies, not panaceas.

